Humans and Nature

Public visions on their interrelationship

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PREFACE

I am about to enter a competition with Noam, my 4 years old son. We are lying on our backs in the grass on top of the river dike. Although I already foresee some debate on the exact position of the finish line, we decide that the winner is the one who reaches the foot of the dike first. After the Go! signal we roll down with our arms crossed before our chest. After rolling over about three times, dizziness sets in. I search for Noam and to my amazement I see him rolling ahead of me. Normally he rolls diagonally, only to end up with his feet down and head up after a few rolls, blocking any further progress. I continue rolling, encouraged by a combination of his success and my own drive to win. Soon feelings of sickness take possession of me. When I gaze down I find myself barely halfway the dike while Noam is still rolling steadily down. I quickly go after him and finish at the bottom of the dike, slightly behind him and overwhelmed by sickness. Here Noam decides that I did not reach the actual bottom of the dike yet. Lying on my back with my eyes closed, fighting against the drowsiness, I realize that over the past five years of doing research on the perception of rivers I was never really confronted with the height of our dikes. It is only after this competition that I recognize how much effort and trust we put in these immense embankments that run through our landscape. I had to rest for a while at the foot of the dike to recover. It was long enough thoroughly enjoy the river landscape that surrounded me and to recognize that over the past years the river had won a large piece of my heart.

When I started this study I was living near the Waal, but the river had never been more special to me than the various other landscapes that surround Nijmegen. I love water, but people make you believe that rivers are not clean enough for swimming and, as I experienced on the Meuse, they happen to be very uncomfortable to sail on. So it was not the river that got me into this. It was my interest in environmental philosophy and Riyan van den Born's enthusiasm to use philosophical themes in empirical studies. Riyan, I still admire your openness to share all new ideas and insights with students and colleagues. I am convinced that this is exactly what it takes to make the academic world an inspiring and learning environment. Thank you for leading me on the way towards Visions of Nature studies, for all our interesting discussions and your friendship. My interest in Visions of Nature also led me to its source of inspiration, Wouter de Groot. Thank you for creating the opportunity to write my thesis on a subject that fascinates me and for your guidance during the process. Bas Arts gave me valuable suggestions to improve the quality of my work, I am grateful for your supervision. I enjoyed working at the Centre for Sustainable Management of Resources especially

because every merger, first with UCM, later with ISIS, brought me into contact with new beautiful people. Emiel you brought much laughter into the Centre and your laidback attitude always had a relaxing influence on me. Paul and Irene, I admire your empathy for the people around you and the environment. Gabi and Jeroen, you joined us for a short while, but during that period you made the centre bubble with energy. I also enjoyed the discussions of the Visions of Nature group, which brought me into contact with philosophers of ISIS (Martin, Pieter, Hub, Jozef and Ron) and their way of thinking about nature. Agnieszka, your stories about Poland and your amazement about Dutch habits were both amusing and enlightening. And last but not least, Madelinde, we both finished our thesis in the same room during the same period. You really know how to arrange things. In the beginning your practical activities formed a great contrast with my occupation, which was mainly reading. I think our difference of fascinations and styles was exactly what made our cooperation so valuable. Together with the many other colleagues you all created the warm surroundings that supported me in writing this thesis. Thank you!

Concerning all the practicalities that are involved when doing an international survey, I first of all would like to thank Jost Armbruster and especially Marie Fournier for their patience and great assistance. Special thanks also to Theo van der Weegen for his support with the statistical analyses and Myf van Gestel for correcting a substantial part of this thesis. At times when everything seemed impossible Ton Stommen showed me how to regain pleasure in my work. Thank you for teaching me that employees do not exist.

I could not have finished this work without the warm support of family and friends. Ismael, Gabi, Beitske, Jeroen and Aaldert, thank you for the many cosy evenings with good food and games, for helping us to make our house fit for human habitation and for babysitting. Annick, your commitment for personal growth and a life in tune with other people and the planet is astonishing and has been an inspiration to me.

Deep gratitude goes to my parents. The naturalness of your love for each other and the children provided me a solid basis. Your interests in art, music, religion, sailing, camping and renovating made me aware of the beautiful things life has to offer. Thank you for providing all the necessary ingredients that brought me where I am today. Sonja en Roos, although we all chose a different direction to settle, the awareness of our bond has been a great help to me. This leaves me at those that are dearest to me, Erik, Noam and Eva. You had to deal with my difficult moods at times when writing a thesis seemed an impossible task. Your sweet smiles, jokes, childish innocence and wit put my difficulties in perspective. Thank you for being there for me.

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CHAPTER 1

Introduction

Introduction

This thesis empirically studies what lay people living in Western countries regard the appropriate way to relate to nature.
Their environmental ethic might be in line with Mastery over nature, Stewardship of nature, Partnership with nature or Participation in nature. Not only will the ethics of the public be elicited but also the two other components of the 'Visions of Nature' umbrella: the image of nature (What is nature?) and the valuation of nature. Based upon interviews and surveys among the population in North Western Europe and Canada, this thesis will test whether the public distinguishes the same images of the human/nature relationship as philosophers do and to which image they adhere most. The study will then search for links between lay people's environmental ethics and other background variables such as religion. Further, by searching for correlations between Visions of Nature and public adherence to river management, this study aims to contribute to the practice of river landscape planning. This contribution is twofold; it gives recommendations on communication and it elaborates on the possibilities of incorporating public values in one of the first stages of planning, called visioning.

Introduction

Today we create large peninsulas where the sea used to reside. We turn meandering rivers into canals with fixed shores. We keep exploring to find more goods to fulfil our needs, into the dark depths of the ocean for edible fish that has never seen daylight; to the arctic for untouched oil supplies; into the jungle to secure our livestock's diet. We create order out of chaos; make the earth a convenient place to live. It appears we have become able to subdue nature, to mould it in every possible shape. It seems we have made ourselves Masters of the earth.

Did not Genesis already tell us to *"have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth?"* [1] Apparently, we have listened to this message quite well. Of course it is too simple to regard this fragment as the cause for our dominating attitude towards nature. It is not the only Christian reference to ecology and the biblical lessons leave much room for a great number of interpretations on how to relate to nature. Yet, the interpretations of the protestant reformers were very clear about nature and our relation to it. According to Luther nature is 'standing under the left hand of God, the wrathful, the alien hand of God'. Since only God can bring salvation and recreate the world at the end of time, man can attempt to the best of his abilities to perfect the finite and corrupted nature. This sounds like a licence to control nature and by doing so 'elevate' it to a level where it becomes useful for human beings.

For the historian Lynn White jr. (1967 p.95-97) it was very clear. He designated Christianity as the root of our environmental crisis and by doing so he evoked a lively debate that continues even in the twenty-first century. In response to his thesis scholars like Passmore (1974), Barbour (1980) and Berman (1981) showed that Western history encompassed more traditions that influenced our stance on nature. Greek Stoicism for instance regarded nature as existing primarily to serve man's interest. Combine this with Bacon and Descartes' Enlightened vision of nature as matter and motion and the path is open to observe, beak up, modify and make use of an entity once alive and enchanted. Although historical roots of the ecological crisis are easy to find indeed, Western history also shows (minor) traditions that deny despotism, such as nature mysticism, Stewardship, the thoughts of the romantic era and Francis of Assisi.

Nevertheless, one question remains. What is left of this heritage? As history always leaves its marks, we may wonder what our stance on nature is at the beginning of the 21st century. Could present-day society possibly have entered a new cultural era? An era that does not continue the dominant view of Mastery over nature but that revives minor traditions and alternative roots? Many academics sceptically assume that today Western man is still Master over nature and start their analysis from there. Ecofeminism (Warren and Cheney 1991) and deep ecology (Fox 1995), for instance, are two philosophical theories (and movements) that attempt to create an alternative ethic to stand up against the human dominion over the earth that they believe to be prevailing today. The same is true for historians. Many are convinced that Western man is a despot of nature and only focus on the quest for its historical roots without calling into question whether this actually is the ethics of the public. Of course the assumption is very understandable.

[1] Lynn White defended the hypothesis that Christian faith is the cause of our ecological crisis in his famous article "The historical roots of our ecological crisis."

Moving from the scientific world into our own lives when we watch the news or read a Greenpeace pamphlet, most of us would conclude that we are behaving like Masters of the earth.

Yet, at the same time we can also trace many hopeful signs in society that reflect a more nature friendly ethic. We see, for instance, great public support for nature conservation organisations, growing criticism against factory farming and more public awareness of the human impact on climate change. Since the emergence of the environmental movement in the sixties and seventies, and the beginning of the debate about Mastery, the general public has become more aware of the consequences of human actions on the environment. Environmental issues gained a prominent place on political agendas and much environmentally friendly behaviour became a daily habit for many. Studies into environmental world views show that environmental thought has increased over the last decades (Dunlap 2008) and that more than three out of four people recognise the intrinsic value of nature in countries such as Norway (Grendstad and Wollebaek 1998), Sweden (Widegren 1998), the US (Thompson and Barton 1994) and the Netherlands (Van den Born 2006). It looks as if we can (no longer) be classified as having a Mastery vision of nature. Among others, this thesis tests the hypothesis that Western lay people have the world view of Mastery over nature by empirically studying the environmental ethics of the public in the Western world.

Visions of Nature

This study will describe lay people's beliefs, world views or visions on the relationship between humans and nature. Every individual has thoughts on how we should relate to nature and on our place in it. We might not think about it regularly or in depth, but we all make assumptions on the issue. In the words of Norton: *"A world view is not necessarily a well developed systematic philosophy. It can be, but the world view of most people remains simply sets of background assumptions, often not even recognized by these people."* (Norton 1991 cited in Van den Born 2007).

A number of scholars have investigated ecological world views since the late 1970s. Especially the (revised) New Ecological Paradigm Scale (NEP) of Dunlap et al. (2000) has become a regularly used instrument to measure public environmental ethics. Yet, in order to measure a wider range of human/nature relationships and to incorporate images and values of nature, this thesis was based upon previous studies into Visions of Nature (Van den Born et al. 2001; De Groot and Van den Born 2003; Van den Born 2006; Van den Born 2008). De Groot and Van den Born (2003) developed an instrument to measure the human/nature relationship in written surveys: the Human and Nature (HaN) scale. Using this scale they discovered that only a very small proportion of the Dutch population still adheres to Mastery over nature, leading to the conclusion that the Dutch are beyond Mastery. Instead, a great majority of the respondents embraced the concept of Stewardship because the notion of responsibility (which plays a key role in this relationship) appeals to them.

When I started my work on this thesis another interesting discovery concerning the public's image of Stewardship was about to emerge. Some of Van den Born's survey

results (Van den Born et al. 2001; De Groot and Van den Born 2003) suggested that the respondents regarded a Steward of nature as someone who is part of nature. This was an unexpected finding, because traditionally a Steward of nature is positioned above nature. This conflict between the traditional Stewardship image and the empirical results was largely attributed to the primitive state of the methods at that time. This study takes it up from there, meaning that the first chapters were carried out in close cooperation and simultaneously with Van den Born's later studies (2007; 2008).

Working on the same type of research, this thesis was based upon the 'Visions of Nature' concept of Van den Born et al. (2001), which consists of three components: (1) 'values of nature', (2) 'images of nature' and (3) 'images of relationship'. Starting with the first component, they describe 'values of nature' as *"the reasons why nature is important"*. Following the environmental philosophical debate this component especially highlights the instrumental and intrinsic value of nature. *"The former might be described as referring to 'value-for-the-benefit-of, or more specifically: use-value; the latter refers to the value that nature has in and for itself, detached from and far beyond (or better: prior to) any instrumental value"* (Zweers 2000).

The second component, 'Images of nature' is the understanding of what nature is. Whether used in environmental philosophy or in ordinary daily communication, nature can refer to a great number of different things. Depending on the context and person using it, it might refer to a pristine state, a human exclusive entity, lifeless elements like the sky or water, self-organisation etc. In order to have a useful insight in the visions of the human/nature relationships it is therefore necessary to prompt lay people's description of what nature is. The third component, the 'image of relationship', is defined as *"images that people hold of the appropriate relationship between humans and nature"*. All three components are subject to philosophical debate and especially the field of environmental ethics is much involved in the search for a just relationship between humans and nature. In their quest ethicists do not use empirical findings to develop their theories but instead base them upon systematic and philosophically grounded thinking. Although this often leads to fascinating insights and new (contested) concepts, this raises the question of how their exercise relates to the ethics of the public. Do these philosophical debates connect with lay people's environmental concerns, are they engaged in the same issues and do they follow the same line of thought? Starting from a philosophical classification into different human/nature relationships, this study will test whether these images of relationships are in line with the philosophy of the public: their 'folk philosophy'.

The present study distinguishes itself from previous HaN-scale studies by its international character. After many Dutch studies and some small scale explorations in Germany (Lindemann in press), Poland (Hunka et al. submitted) and Czech Republic, this is the first large scale investigation beyond Dutch borders. Another difference is its main focuses on the last component; images of human/nature relationship. The 'images of nature' and 'values of nature' will only be taken up as far as they are necessary to correctly interpret and contextualise the images of relationship. Finally, while Van den Born (2007) explored the relationship between Visions of Nature and childhood experiences, this thesis investigates how religion and adherence to river policy relate to Visions of Nature.

Religion and rivers

Going back to the analysis on the roots of the environmental crises, we see that Lynn White jr. made two interesting assumptions. The first is that Western man desires to be a Master over nature. Because Van den Born did not find empirical grounding for this assumption among the Dutch population, the present study will check whether this result can also be found in other Western countries. A second assumption of White is that Christianity is an important cause for a Mastery attitude. Many other scholars also claim that *'religions are key shapers of people's world views and formatters of their most cherished values'* (Tucker and Grim 2001). In order to check this second premise, this thesis will study the connection between religion and visions of human/nature relationships. Previous empirical studies that focus on this link are quantitative surveys that solely focus on Christianity (see for instance: Shaiko 1987; Woodrum and Hoban 1994; Eckberg and Blocker 1996). Since they generally show a weak or non existent correlation between religion and ecological world views, this field seems to have reached a dead end. This thesis attempts to give new inspiration to the field by broadening the scope from solely Christianity to the inclusion of other world religions like Islam and Buddhism. Another difference from these previous studies is the use of qualitative methods and the incorporation of a wide range of human/nature relationships among which Stewardship of nature. This part of the thesis was located in Canada: a Western society that contains many religions, such as Christianity, Native American beliefs and the Islamic and Buddhist faith of Asian immigrants.

A theme that plays a prominent role in later parts of this thesis is public adherence to river flood protection policies. Against the cultural landscapes of North-Western Europe rivers are still relatively wild natural features. Centuries of dike reinforcements, canalisation and land reclamation have had great impact on the rivers, but they are not entirely tamed. Floods are still likely to appear in the near future especially because climate change is expected to cause more fluctuations in water levels. The possibility of unpredictable natural extremes makes rivers an interesting feature to incorporate in Visions of Nature research. How do we relate to this unpredictable natural element? What is an appropriate way to manage it?

When looking at water management in North Western Europe today, scholars such as Van der Brugge et al. (2005) and Wiering and Arts (2006) note a shift over the last decades from more technical engineering solutions that meet short term needs to more sustainable approaches that take into consideration the future needs of both ecology and society. Concepts like 'room for the river', adaptive management, eco-system based management all refer to these more environmentally sensitive ways of coping with high water levels in the river (De Groot and Lenders 2006). Examples of 'Room for River' measures are for instance the construction of side channels and retention areas, dike relocation or the removal of trees. The European Water Framework Directive [2] (WFD) largely follows this trend and applies it to river policy among all EU-member states. This substantial piece of water legislation aims at a healthy water environment in all EU-member states by taking into account environmental, economic and social considerations.

[2] http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm (22-07-2009)

The question is whether this policy shift is based upon a different relationship between humans and nature. Is the dominating manager engineer that battled against the water changing into a Partner of nature? De Groot (1987) recognises in the 'Room for River' policies an image of harmonious Partnership with rivers, a true cooperation between humans and nature. Yet, at the same time this adaptive river management can be regarded as a more sophisticated despot that tries to control nature. Van Hemert (1999) follows this more sceptical line when she claims that the policy transformation only includes a 'discursive' shift. The ethics did not change, because *"all measures are only aimed to give the water precisely the room that the engineer considers necessary from a safety perspective"*. Nature did not change into a friend, but faster calculating hydrological computer models provide more powerful instruments in the hands of the engineer to intervene and control nature. De Groot suggests that the policy shift is based upon a change in 'deep normative core beliefs', while Van Hemert interprets it as changes on the shallow level of 'secondary aspects' (Sabatier and Jenkins-Smith 1993). In between these two extreme standpoints Arts and Wiering (2006) take a middle ground position when they conclude that the policy shift is neither merely discursive nor fundamental. Although many system engineers still keep believing in 'the engineering of society', in the long term the new approach might lead to structural changes in policy. Since this study focuses on lay people, it will investigate whether their core beliefs regarding the appropriate human/nature relationships are in line with flood protection policies. First the images of relationships of residents along North Western European rivers will be measured. Subsequently, the public adherence to different kinds of flood protection will be measured, ranging from traditional measures like dike reinforcement to more sustainable 'Room for River' options. Then the link between the public images of human/nature relationships and their adherence to certain policies can be observed. In this way it is possible to empirically test Bryan Norton's hypothesis (1991) which presupposes that non-anthropocentrists and anthropocentrists can arrive at common environmental policy goals. Although his hypothesis received much criticism among environmental ethicists, it has only been tested empirically by Norton himself and Minteer (2009). This thesis attempts to test Norton's hypothesis by studying the interrelationships between public environmental ethics and adherence to different flood risk management styles.

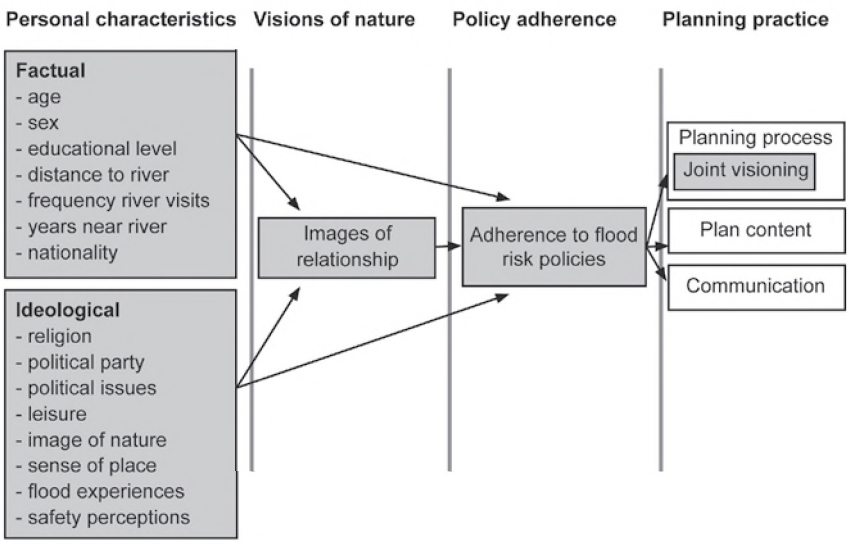
This part of the thesis was carried out in France, Germany and the Netherlands. The choice for these countries followed my Participation in the 'Freude am Fluss' project. This EU-funded project focused on more sustainable and joyful flood risk management in two major European rivers: the Rhine in Germany, the Waal in the Netherlands and the Loire in France. Within the project a consortium of universities, governmental and water authorities, local communities, and public organisations stress the advantages that living along the river brings. [3]

Throughout the thesis the personal background variables of the respondents, such as age and educational level, were studied and linked with their Visions of Nature. Especially the chapters on flood protection include an abundance of background variables of which many are related to life along the river. Examples are attachment to the river, frequency of river visits and number of years living along the river. Figure 1.1 shows that

[3] www.freudeam fluss.eu (22-07-2009)

these background variables can be divided into factual and ideological characteristics, in which the ideological ones are more difficult to measure. All background variables may have an influence on the images of the human/nature relationship.
As shown in figure 1.1, the visions and adherences of the public form the backbone of the study and are expected to have an influence on river management. Therefore the interrelationships between Visions of Nature and the adherence to flood protection policies are studied. These results are relevant to improve communication about river management and to give insight into public support for flood protection policies. Nevertheless the practice of water management itself is largely kept aside. An exception forms joint visioning. This first step in joint planning was taken up in order to illustrate how the results of Visions of Nature studies can be used in one of the primal stages of planning.

Figure 1.1 *Research model*



The issues depicted in the grey boxes are the subject of study; the subjects in the white boxes are the more practical fields of water management that may benefit from the results.

All subjects of study can be encapsulated in the following objective:

This study taps Western lay people's images of human/nature relationship and connects these with background variables and adherences to flood protection policies in order to empirically test environmental ethics perspectives and to give recommendations on visioning and communication in river landscape planning.

Visions of Nature studies

As are most environmental studies, this one is interdisciplinary in nature and shares common ground with philosophy, theology, history, psychology, sociology and anthropology. This section will position this 'Visions of Nature' study, by outlining the interfaces with both conceptual and empirical disciplines.

Conceptual disciplines

The themes and the vocabulary of the Visions of Nature umbrella are mostly derived from environmental *philosophy*. For instance, the concepts of intrinsic and instrumental value prevail in the component of 'values of nature' while the dichotomy between humans (culture) and nature are prominent in the study of 'images of nature'. Concerning the images of the human/nature relationship, this study is primarily based upon classifications of relationships with nature. This primarily Anglo-Saxon undertaking has received much attention from Dutch philosophers in recent years. These authors mostly refer to the visions of human/nature relationships with the term world view or (basic) attitudes towards nature. Like Zweers (2000) who describes basic attitudes towards nature as expressing *"a specific conception about the basic structure of reality, (...) a world view, or view or reality."* This view consists of a conception of nature, but also entails a reflection on oneself, on humankind, who they are. The view of nature and the view on humankind are complementary: *"My conception of nature expresses something about myself and the way I see myself expresses something about the view I have of nature."* Both views meet in the way we relate to the world, our relationship with nature.

While Anglo-Saxon scholars primarily described world views that occur in Western tradition or the environmental movement, Dutch philosophers made overviews of relationships that were both traditional and newly developed in order to reach a wide spectrum of possible relationships. For instance, Passmore (1974) and Barbour (1980) described the tradition of dominion over nature, Stewardship of nature and Unity with Nature. Subsequently De Groot (1992) developed a Partnership ethic, based upon the writing of Jim Cheney (1987) and Sarah Ebenreck (1983).

Relationships that can be found in most Dutch classifications are Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature. In the first image, Mastery over nature, human beings are positioned above nature and may transform and control it as they please, unfettered by moral restraints. The Master puts great trust in technology and economic progress as solutions to environmental problems. In Stewardship of nature, human beings have the responsibility of taking care of nature on behalf of God or future generations. This image is also hierarchical: God is on the highest level, followed by humans in the middle and nature below. The Partnership with nature image is a metaphor for an equal relationship between human beings and nature. They both have their own status and work together in a dynamic process of mutual development (De Groot 1992). In the most ecocentric image, Participation in nature, human beings are part of nature in the sense that the connectedness with nature gives meaning to the Participant's life. Humans are not

inferior to nature, but they have the potential to participate in nature (Zweers 2000). In the field of *history* the most influential article was of Lynn White (1967). In line with his analysis a number of historians assumed that the attitude of western man towards nature is despotic and searched for the origins of this prevailing basic attitude. Mostly, they trace it back to the Greek Stoics and the thinkers of the Enlightenment. Another often heard historical analysis is that religion has played a key role in the development of the dominion attitude. This is where *theology* comes in. This field investigates which Visions of Nature are inherent in religious convictions. Due to the special attention to attitudes towards nature in Western culture, most theological literature on nature focuses on Christianity and Protestantism (Kinsley 1995; Keller 2000). Particularly over the last decade attention has developed for environmental ethics in other religious traditions, such as Islam (Nomanul Haq 2001), Hinduism (Narayanan 1995), Buddhism (Gross 2000) and Judaism (Levy 1995). Although highly interesting, all these disciplines develop theories conceptually, without any 'reality check' on the values and images of the public. Social environmental studies are the obvious field to bring forth this empirical check.

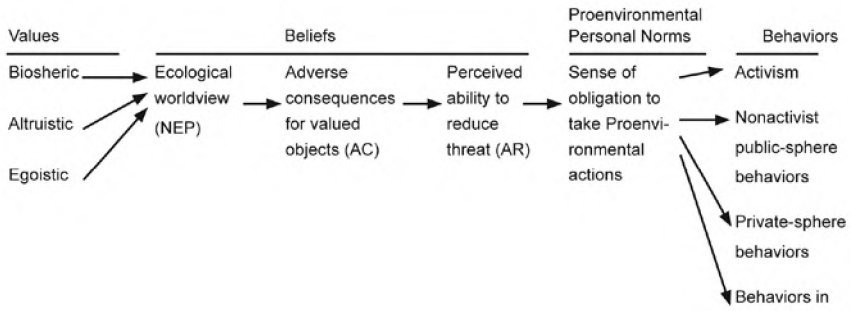
Empirical disciplines

The empirical study on Visions of Nature has a large overlap with the focus of environmental *psychology*. This field focuses on *"the interrelationship between behaviour and the built and natural environment"*(Fischer et al. 1984). As this definition shows, the field of environmental psychologists studies not only nature but also built environments and by doing so links up with disciplines like architecture.

The most striking difference between Visions of Nature research and environmental psychology is that psychologists primarily study the environment in order to explain human *behaviour*. Their interpretation of attitude even incorporates a behavioural component next to a cognitive and an affective one. The field assumes that our thoughts and feelings about the environment are regarded as inextricably bound up with our behaviour. In contrast, 'Visions of Nature' studies do not intend to predict or explain behaviour, but merely scrutinise the nature of more deeply hidden views, values and ethics. These personal philosophical reflections reside at a more basic and abstract level than the attitudes psychologists refer to. In order to avoid confusion about the meaning of the term 'attitude' in this thesis I decided not to use it and to refer to (world)view, vision, image, belief, value and ethic instead.

Nevertheless, a small number of psychologists have incorporated values and human/nature relationships in their studies. In 1995 Stern et al. noted the ignorance of values and beliefs in most psychological studies and theories; *"social-psychological models illuminate attitude-behaviour links, but they do not link the fairly specific environmental attitudes and beliefs they measure to broader world views, values, or the influences of social structure"*. In order to solve this problem Stern et al. (1995) incorporated values into the Norm-activation model of Schwartz (1970) resulting in the model presented below.

Figure 1.2 *A schematic representation of the variables in the value-belief-norm theory of environmentalism (stern et al., 2000).*



Note that "each variable in the chain directly affects the next and may also directly affect variables farther down the chain" (p. 413).

Thompson and Barton (1994) also incorporated values in their study on anthropocentric and ecocentric beliefs. They describe ecocentrism as follows: *"To ecocentrics nature has a spiritual dimension and intrinsic value that is reflected in their experiences in nature and feelings about natural settings."* This fragment shows that their scales not only measured values but also enhanced a vision on the appropriate human/nature relationship. Unfortunately they only focused on the two extremes, leaving more middle ground relationships like Stewardship aside. Other psychological studies that touch upon human/nature relationships are those on connectedness to nature (Schultz et al. 2004; Dutcher et al. 2007). For instance the Connectedness of Nature Scale (CNS) of Mayer and Frantz (2004) can be regarded as measuring (self reported) affections and experiences in nature that link up with ecocentric relationships with nature. Finally, some scholars in the field of developmental psychology focus on the wording of environmental moral reasoning and values. Most famous are the studies of Kellert (1989) and Kahn (1999) on values, knowledge, behaviour and values of nature that were mostly carried out among children. Their studies are much inspired by the biophilia hypothesis of socio-biologist Wilson (1984) who states that it is a genetically based human need to affiliate with nature.

Another difference between the present thesis and psychology is the minor attention of the latter for the social or historical context. In contrast, *sociology* is very much concerned about the social context. With the emergence of societal attention to environmental problems in the early 1970s, some sociologists criticised their field for its ignorance of the physical world as an explanation for social phenomena. As a result environmental sociology came into being, focusing on the interaction between the environment and society.

This field focuses on social phenomena like NIMBY ('Not In My Backyard') syndrome, the emergence of grassroots environmental groups and environmental justice (Dunlap 1997).

Environmental sociological studies that are most in line with Visions of Nature studies are those measuring the societal reaction on environmental problems in the form of

public opinions, perceptions or environmentalism. Of these the study of Dunlap and Van Liere (1978) into core American values is most influential. Following Pirages and Ehrlich (1974) they described the dominant culture in the U.S. as one in which individualism, free enterprise, abundance, growth and prosperity prevail. Because this 'Dominant Social Paradigm' is very anti-ecological, Dunlap and Van Liere (1978) developed an alternative; the New Environmental Paradigm (NEP). This new paradigm was based upon minority voices within society that tried to bring into the open issues like limits to growth, balance of nature and anti-anthropocentrism. In order to get insight in the popularity of these new values Dunlap and Van Liere (1978) developed a survey method existing of 12 statements.

Of the three beliefs included in the NEP, the statements representing anthropocentrism show close resemblance to the Mastery relationship in Visions of Nature studies.

The statements on limits to growth and balance of nature have a somewhat different character, they do not measure human/nature relationships but rather 'an individual's general awareness of the consequences of harming the natural environment' (Schultz 2001). The most striking difference between NEP and Visions of Nature studies is that the NEP only measures degrees of anthropocentrism (Van den Berg et al. 2006), while the images of human/nature relationships also includes ecocentric relationship like Partnership and Participation. In other words, NEP only measures non-anthropocentricity, without a differentiation in types of ecocentricity. The revised NEP (New Ecological Paradigm Scale) (Dunlap et al. 2000) does not solve this problem (Van den Born 2006), but only includes two other beliefs; 'humans as exempt from nature' and 'the possibility of an ecocrisis'. The absence of more ecocentric values in the revised NEP-Scale is remarkable, considering a number of studies that showed an increased popularity of environmental values over the last decades (Thompson and Barton 1994; Dunlap 2008).

When developing the NEP, Dunlap and Van Liere (1978) did not link their scale with social psychological concepts of attitudes and perception, because they were unaware of it at that time (Dunlap 2008). After many environmental psychologists had made use of the scale Stern incorporated the NEP into the value-belief-norm theory pictured in figure 1.2. Another interesting study that bridges the gap between sociology and psychology is Buijs' (2009) thesis on images of nature. Based upon the social representation theory, he studies *"socially developed interpretations"* of nature.

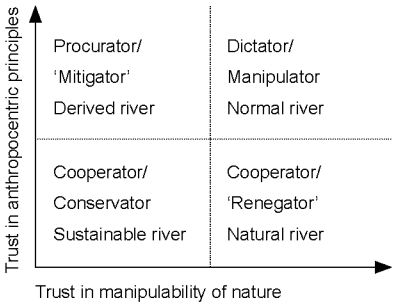
These social representations are individual beliefs and values that come into being in a social group and are subjected to the cultural context.

Finally, another perspective that is related to Visions of Nature studies and combines elements of psychology and sociology is framing. Often used in resource management this field investigates how people take a stance on a socio-political issue. *"A frame reflects our interpretation of what is going on and how we see ourselves and others implicated in what is happening"* (Lewicki et al. 2003). Frames encompass more than values, beliefs and visions because they also include interpretations on other conflict elements like the involved parties, the social system and the conflict process. As Buijs (2008) rightfully states, frames are also different in their *"context dependency and time scale"*. Frames only develop and exist as long as the issue is at stake while images are shaped and remain intact over a large number of practices, or at least we believe they do.

In anthropology the field of cultural ecology deals with the interaction between humans and the environment, or more precisely: How culture supports humans to adapt to their environment (Sutton and Anderson 2004). Although most anthropological studies focus on how humans solve subsistence problems and share knowledge, some focus on local perceptions of ecology because of its merits for nature conservation. Anthropologists strive to sketch an in-depth and holistic picture of small scale (sub)cultures based upon intensive contact with people. Examples of anthropological studies that deal with Visions of Nature are for instance a study on attitudes towards elephants (Hill 1998), on a Mongol herder's perceptions on dune sand (Williams 1997) and on values about nature among organic farmers (Kaltoft 1999).

Two anthropological studies resemble the present 'Visions of Nature' study in the sense that they focus on society in general and are situated in Western culture. First, Kempton, Boster and Hartley (1995) give a thorough description on the belief system and values of US-civilians based upon in depth interviews followed by a large scale survey. They conclude that a wide range of individuals, running from environmentalists to managers of polluting industries, share more or less the same cultural model with regard to environmental issues. Second, Thompson, Ellis and Wildavsky (1990) provide a conceptual framework to analyze the human/nature relationship, e.g. 'cultural theory'. Based upon the grid-group typology of the anthropologist Mary Douglas, they describe five ways of living and combine each way of living with a myth (image) of nature. Scholars like Lima and Castro (2005) and Steg and Sievers (2000) developed survey scales to empirically measure the myths of nature in Western societies. Van Heezik (2007) applied cultural theory to Dutch river policy which results in four paradigms that vary in trust in anthropocentric principles and in the manipulability of nature.

Figure 1.3 *Four images of human/nature relationship in Dutch river policy with their corresponding image of the river (fundamental policy conviction)*



After Van Heezik (2007).

Empirical philosophy

After this trip along related disciplines and theories, the time has come to precisely explain the position of this thesis. Starting points are the classifications of human/nature relationships of primarily Dutch philosophers into Mastery over nature, Stewardship of

nature, Partnership with nature and Participation in nature. This thesis will search for an empirical grounding of the images of human/nature relationship and is best described as 'empirical philosophy'. During the past decade the attention of philosophers for this type of research has emerged and resulted in their contribution to a number of Visions of Nature studies (Minteer and Manning 1999; Berghöfer et al. 2008).
Although the terms 'vision' and 'image' sound unfamiliar to psychologists and sociologists, they can be regarded as synonymous with what they would call world view and belief. In line with Dunlap and Van Liere (1978) who interpret world views as a constellation of attitudes, values and beliefs, Stern et al. (1995) do not heap together values, beliefs and attitudes, but tend to distinguish between these concepts. As shown in figure 1.2, values are at the beginning of the chain and represent *"relatively stable, central elements of personality"*, while beliefs are more focused. The whole chain of values and beliefs explains the formation of attitudes. I would argue that 'Visions of Nature' are similar to what Stern et al. (1995) refer to as beliefs and values. This constellation can be called world views, but in contrast to Dunlap and Van Liere (1978) I do not regard attitudes as part of this, because in the psychological meaning of the term, attitudes are less stable than beliefs and include a behavioural component. In combining both psychology and sociology, visions are regarded as individual mental constructs that develop in a social and cultural context. Since these constructs cannot be measured directly, this thesis will be based upon the respondents' self reported reflections upon their visions and values. These might be on a more cognitive level when reporting on images such as Mastery and on a more experience based and affective level when reporting on unity with or connectedness to nature.

Methodology

In this thesis Visions of Nature are studied using both written questionnaire surveys and semi-structured in-depth interviews. To take advantage of the merits each method possesses, they focus on different research questions: The surveys give insight into the visions of human/nature relationships that lay people distinguish and show to which visions they adhere most. Further, these quantitative methods explore the correlations between background variables of the respondents (like age and perceptions on policies) and their Visions of Nature. The interviews answer questions on how people exactly view the human/nature relationship; the themes that are important to them and how they reason. This qualitative inquiry also goes deeper into their ideological characteristics; why do respondents prefer certain specific policy measures? And what does their religion mean to them? Both methods are used sequentially which gives the opportunity to integrate the empirical outcomes of the previous stage into the next empirical undertaking. For instance the Beuningen study reported in Chapter 3 started with in depth interviews to get acquainted with the line of thought of lay people and the issues they raise while talking about nature. Some of these issues or ways of reasoning were then taken up in the written survey to test their popularity among a larger public.
The previous sections positioned the content of this thesis within related studies.
In addition we can also position this thesis within the field based upon its methods and

paradigms. The many disciplines involved in Visions of Nature studies differ in their preference for certain methods and perspectives on reality and truth, i.e. their philosophy of science. For instance, the roots of much psychological research trace back to natural scientific experiments and in line with this many psychologists adhere to a positivist or post positivist paradigm. A short look into the content list of the most prominent psychological journal in this field 'Journal of Environmental Psychology' shows that most studies are based upon numerical data, collected in surveys or experiments in order to make generalisations to other persons, settings and times possible. Once in a while a phenomenological study is published. These studies are based upon a totally different paradigm; in line with constructivism they give much room to qualitative observations and interpretations of the observer. Studies that bridge both methods and paradigms are difficult to find in this journal.

In contrast to environmental psychology, cultural anthropologists mostly use qualitative methods. They tend to place emphasis on interpretative analyses of narrative data and cultural uniqueness through observation and interviews with open ended questions (Sutton and Anderson 2004). In general, anthropologists primarily share a more constructivist paradigm in which the researcher cannot comprehend a single external reality because the world comprises many personal constructions of reality.

The understanding of these constructions requires a close interaction between the knower and the known and can therefore never be objective or value free. Naturally, not all cultural anthropologists exclusively use qualitative methods. A good example of an anthropological study that uses both qualitative and quantitative methods is by Kempton, Boster and Hartley (1995). Instead of looking for cultural uniqueness, they tend to look for more general cultural modes that prevail in American culture.

The combination of qualitative and quantitative methods is what (Teddlie and Tashakkori 2009) call a mixed methods approach. I would argue that a combination of both qualitative and quantitative methods has several advantages. It contributes to the validity because it makes data triangulation possible. Moreover, it may lead to insights that remain overlooked when applying only one method. Especially when the methods result in divergent findings, re-examination often leads to new understandings. In the words of Deacon, Bryman and Fenton (1998, p. 61, cited in: Teddlie and Tashakkori 2009): "*Whatever short-term inconvenience this may cause, in many cases the reappraisal and re-analysis required can reap long term analytical rewards: alerting the researcher to the possibility that issues are more multifaceted than they may have initially supposed, and offering the opportunity to develop more convincing and robust explanations of the social processes being investigated*". The comprehensiveness of the mixed method approach also has a disadvantage, because the supplemental data is sometimes thin and suspect. This problem can partly be met by a good description of the methods and by verifying the supplemental data (Morse 2003).

This leads to the question from which paradigm I should work. According to Teddlie and Tashakkori (2009) the most suitable paradigm for mixed methodologists is pragmatism because this paradigm bridges the differences between realists and constructivists. The basic principle of pragmatism is to focus on 'what works best'. This applies to epistemological and ontological issues but also in selecting methods to answer the research questions. Nevertheless, in my opinion, this paradigm is too vague

to show the standpoint of a scholar with regard to the state of reality (ontology), the potential to know reality (epistemology) and understanding it free of value (axiology). As a first step towards a more concrete answer on these questions, I will investigate the character of Visions of Nature more thoroughly. This because I consider the subject of study an important factor. For instance, when investigating gravity it is more likely to adhere to positivism than in a study on lesbian perceptions on marriage. This rationale also explains why especially behaviourists lean towards positivism in the field of psychology; human behaviour can be observed without much interference with the participant and relatively free of value. When moving towards the focus of this study, the natural environment, we see that it is subject to many definitions and interpretations. Although the results of ecological studies are often regarded as rather objective, these are often full of assumptions on what is most natural, how nature functions and how humans (should) conserve it. Although most ecologists adhere to a realist paradigm, a more critical outlook would make their results and recommendations more transparent and leaves the road open for other interpretations. Since these assumptions on nature are the very subject of this thesis, it is important to accept different interpretations of reality. I share the opinion with others in this field (Kahn 1999; Davies 2006; De Groot 2006) that Visions of Nature are human constructs but based upon a reality that is out there.

(...) ideas of nature are like plastic; they can be squeezed into different configuration, but at the same time there are some limits. The idea of nature that would have us all leaping in front of trains is outside of these limits, that is, it is not a viable idea of nature (Thompson et al. 1990).

In line with critical realism I enhance elements of realism like the acceptance of an external world, but recognize that this reality can only be known imperfectly and is subject to many interpretations.
Following critical realism, I consider generalizations possible to a certain extent. In line with Kahn (1999), I would claim that there are differences between interpretation and ethics regarding nature between particular cultures and between peoples living within these cultures. These primarily manifest on the practical level of behaviours, rituals and moral rules. Yet, on a more abstract and deeper level one can recognize some universal moral constructs across all cultures such as justice or welfare. Kahn illustrates this with the rather universal feeling of remorse when stepping by mistake on, say, a beautiful caterpillar. Apart from these universal feelings, I would also expect environmental ethics to show many similarities across certain cultures and religions, due to their general character. For instance, a recent empirical study on environmental ethics in Iran (Balali 2009) shows responses on Stewardship items that are in line with those in the Netherlands. Although these resemblances might not occur between all cultures, it does indicate a large agreement on certain ethics across different cultures. As de Groot (2006) showed, especially Visions of Nature *surveys* generate similar responses among respondents and nationalities. The results of focus groups and interviews are expected to be more divergent because these settings require the respondents to contemplate the question and to apply their abstract ethics to the context.

Relevance

As the objective shows, the results will serve both theoretical and societal means. One of the larger challenges underlying this study is to contribute to both abstract philosophical debates and concrete societal problems like public support for flood protection policies. This exercise explores whether empirical investigations of Visions of Nature provide the opportunity to serve both ends.

Theoretical relevance

Concerning the contribution to theory development, this study is primarily relevant to environmental philosophy. The thesis is based upon philosophical classifications and refers to many concepts derived from environmental ethics. This approach makes the results compatible with environmental philosophy and by so doing provides conceptual thinkers with a glance in the kitchen of social scientists. This passage into empiricism is highly relevant because it gives philosophers the opportunity to position their work in relation to the dominant culture and to determine their course from there.
The confrontation with lay people's ethics might lead to the conclusion that some conceptual thinkers are flogging an empirically dead horse, while others are reworking a generally held mainstream idea. A solid understanding of one's position in relation to prevailing ideas gives one the opportunity to plan a particular route. For instance to reformulate more advanced notions, to explore radically new issues or to emphasise on issues that scarcely get the attention of philosophers while being a guiding principle to lay people, such as the responsibility for nature. In this way empirical studies might inform and reformulate ethical systems. Or as Butler and Acott (2003) explain it: *"For example, problems inherent with theoretical ethical systems may be overcome in unforeseen ways once these theories are actually put to practice, or else conversely, the reasons which people give for rejecting the adoption of a particular set of ethics in practice may serve to illustrate weaknesses within such a system."* This does not imply that the public should democratically decide which issues get the attention of philosophers, but that philosophy could benefit from insights into public visions and values.
Apart from its merits for conceptual thinkers this study also contributes to the further development of social scientific theories. Most important in this regard is that this thesis incorporates a wide range of human/nature relationships. The spectrum not only includes the extremes of ecocentrism and anthropocentrism but also taps images in between such as Stewardship and Partnership. Especially these 'middle ground values' have received minor attention in previous studies and little is known about the way the public distinguishes between and adheres to them. This leaves a knowledge gap on values that might turn out to be the corner stone of Western culture. If this is shown to be the case then these middle ground values should get a more prominent place in social scientific theories and measuring instruments. The further development of the HaN-scale towards an internationally applicable instrument forms an important methodological step to this more complete understanding of ecological beliefs and values. Moreover, due to the inclusion of background variables, such as educational level, age and religion, this thesis also explores which background variables influence human/nature relationships.

Societal relevance

The contributions of this thesis to society are twofold; the results may contribute to the incorporation of public visions in (river) nature conservation policy, and to more effective communication with the public. Although both issues are largely beyond the focus of this thesis, the following section will stress the importance of Visions of Nature studies for visioning and communication.

Relevance for planning

Starting with the relevance for planning, the insights from this thesis may contribute to more democratic decision making that is likely to receive more public support.
Mostly the formulation and the justification of nature policy are based upon natural scientific research. These studies attempt to provide the necessary information as value free as possible in the form of facts and theories. The scientific outcomes are often regarded as facts and used as basis for decision making. The justification for these decisions requires a normative claim. Or in the words of Max Weber; (social) policies *"cannot be resolved merely on the basis of purely technical considerations which assume already settled ends. Normative standards of value can and must be the objects of dispute(...) because the problem lies in the domain of general cultural values"* (cited in: Fischer 1980, p19). This raises the question of whose values are decisive for nature conservation policies. Since especially ecologists make the investigations and the decisions in this field, their viewpoints and values (implicitly) shape nature conservation policy. This has two disadvantages. Firstly, ecology cannot give unambiguous answers because it is separated into competing programs and goals (Keulartz et al. 2000; Zweers 2000). For instance, community and ecosystem ecologists might differ in their approach to nature restoration because the first regards biodiversity as the ultimate goal while the second takes into account many other elements that constitute an ecosystem. A second disadvantage of incorporating solely ecological values, is that they are often not in line with the ethics of all those concerned, like residents. This makes the formulation of policies less democratic and might lead to low public support or even protests (Keulartz et al. 2000).
In order to make planning more democratic it has to be founded on a wider range of values and visions, including the symbolic and emotional 'ecology of the heart' (Schroeder 1996 cited in Davenport and Anderson 2005). Stakeholder perspectives can for instance contribute to the effective development of ecological indicators.
The inclusion of lay people and non-scientists brings to light different knowledge and values and in doing so raises both the quality and the acceptance of the ecological studies (Turnhout et al. 2007). This thesis can contribute to this more democratic type of decision making by expressing the public's Visions of Nature. In this way, too, the values of minorities (Hampton 2004) or those who are not invited in public Participation (Davies 2001) can be described in order to do justice to cultural diversity. Along the same line it can be expected that policies that take into account public values gain more public support. However, the recognition of public values does not provide a guarantee for acceptance, because it is *"a necessary but not sufficient condition"* (Zweers 2000). This raises the question on how these visions should be taken up in the planning process. I would argue that the results of this thesis can best be regarded as a starting

point for a discussion among stakeholders and between stakeholders and (local) civilians. Ideally, this should be done in an early stage of a (joint) planning process (Fordham et al. 1991; Davenport and Anderson 2005) for instance in joint visioning sessions. An early inclusion makes it possible to create a shared objective based upon values and visions, before personal wishes and interests start to rule the game. In the stage of joint visioning, the abstract and deeply rooted character of values form a more stable starting point for agreement than interests do. True co-operation can follow when all participants first reach a consensus on this fundamental level, and in doing so generate mutual respect and trust. It is only from such a foundation that democratic and widely supported plans are able to arise (Kockelkoren 1993; Keulartz et al. 2000). How exactly Visions of Nature can contribute to joint visioning is difficult to find in scientific literature. Therefore Chapter 4 explores the issue in two practical cases.

Relevance for communication

Be it the preacher in church talking to his congregation or the water manager talking to the residents living along a dike, insight into the views of your audience makes it possible to anticipate on their ethics. In referring to the same values and using similar concepts and vocabulary the message is easier to understand. Differences between the visions of the stakeholders and the public can be overcome by explaining the issue more thoroughly or from a different angle. Walton and Bailey (2005) show a rather extreme example from Alabama, where wildlife organizations adapt their message to the visions of their public. In contrast to most wildlife organizations they draw on populist sentiment, appealing to the image of *"hard-drinking, gun-toting, redneck wilderness lovers"*.

Apart from the communication with the public, the results of this study also have the potential to contribute to more effective communication among stakeholders. While reading the values of the public the stakeholders become more aware of their own values and on how these relate to their preferences regarding nature conservation policy. The realization of these often implicit visions is an important step towards understanding the assumptions on which their opinion is based. Bringing this deeper level to the surface makes it easier to clearly explain the motives and justifications of decisions to the other stakeholders (Aarts 1998; Zweers 2000).

Reading guide

The following chapters comprise separate studies that are all guided by their own objective. This creates the opportunity to playfully apply the concept of 'Visions of Nature' in different settings, to link it to a variety of other themes ranging from religion to flood protection policies and to address different reading publics. For the reader this implies that one chapter might appeal more than another and that the chapters can easily be read independently or in a different order. A consequence of this approach is that the introduction to each study explains the theoretical background and the concepts, which results in some repetition and a somewhat shallow description of the theory. The sequence of the chapters follows the methodological development of the

HaN-scale and starts with the first version of the scale and ends with the latest HaN-survey.

Chapter 2 is located in Victoria, a city on Vancouver Island on Canada's West coast. The objective of this study is to explore the link between Visions of Nature and religion. Based upon 27 semi structured interviews with respondents of different religious backgrounds we conclude that Muslims and Christians adhere more to the Stewardship image while Buddhists and Native Americans are more fond of Participation in nature. The secular respondents combined two or more images of relationships in order to express their ethics. The qualitative approach was completed with a small scale written survey including the HaN-scale.

Chapter 3 also shows the mixed method approach, but this time the survey (including the HaN-scale) formed the core. In the village of Beuningen along the river Waal (Rhine) in the east of the Netherlands a written survey and 12 interviews were carried out on Visions of Nature and flood protection policies. Other themes that are important with regard to the river were taken up as well, such as place attachment and safety perception. The results show that residents adhere most to the Stewardships image and that this relationship correlates negatively with the removal of trees in the floodplain, which is one of the 'Room for River' measurements.

Chapter 4 explores the practical application of Visions of Nature studies in visioning, an early stage of landscape planning. It explains how value studies may contribute to a joint visioning process between experts and civilians. This study describes two cases: Arnemuiden and Beuningen. In both cases we describe how values can be included in the visioning process and we show that the public was very capable of expressing their values and of jointly visioning with experts.

Chapter 5 shows the results of an international survey among residents of the river landscape along the Loire and the Rhine in France, Germany and the Netherlands. As was the case in the Beuningen survey (Chapter 3), this study consists of a revised version of the HaN-scale. Most revisions were based upon the outcomes of the Beuningen study and approximately 45 validation interviews in all three countries. Other themes like place attachment, safety perception, leisure experiences and Room for River policy were also included and subsequently converged into a regression analysis. This study shows that all nationalities adhere most to Stewardship, reject traditional dike reinforcement and embrace the 'Room for River' approach, although they perceive both policy lines as too anthropocentric.

Chapter 6 shows the philosophical implications of the international survey results. Based upon a factor analysis of human/nature relationships we show that the respondents distinguish two forms of ecocentricity (Partnership and Participation) and conclude that Stewardship of nature is a massive mainstream image. These results contradict two assumptions that play a role in many philosophical debates: a) Western man has the world view of Mastery over nature and b) unity with nature as the only possible ecocentric attitude towards nature. Due to its general character this chapter can be read as an introduction to the theory and methods of all HaN-scale studies and can therefore also function as a 'Chapter 1'.

In Chapter 7 all studies converge into a discussion that gives an overall synthesis of the results. Furthermore, this final chapter discusses the methods used and the implications of the results for both theory and practice.

Humans, Nature and God

Exploring images of their interrelationships in Victoria, Canada

CHAPTER 2

Humans, Nature and God

Exploring images of their interrelationships in Victoria, Canada

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This study explores Visions of Nature among five populations in Victoria, a small city in British Columbia, Canada: Christians, Muslims, Native Americans, Buddhists, and secularists. Each group was asked to express their view of the human relationships with nature based upon four approaches: Mastery over nature, Stewardship in regard to the creation, a Partner, or a Participant in the processes of nature. The first model, in which humans wield hierarchical power and Mastery over nature, was rejected by all groups. Christians and Muslims adhered to the Stewardship image of the human/nature relationship, while Buddhists and Native Americans considered themselves to be Participants in nature. The secularists made combinations of the approaches to exemplify their view. Twenty-seven individuals participated in extensive interviews as part of this study, which also included a small scale written survey of fifty-three persons.

[4] We wish to thank the Coastal Inquiries project and the Centre for Studies in Religion and Society at the University of Victoria for offering the fellowship that enabled us to carry out this research in Canada. We would also like to thank Hub Zwart, Wim Hofstee and Wouter de Groot for their enthusiasm for this project and their valuable comments.

Introduction

In 1967, Lynn White, Jr., asserted that Christian attitudes toward nature have caused an ecological crisis. Since that time, various theologians and philosophers have criticized the despotic actions taken by human beings toward nature and the role of Christianity in shaping an overbearing and harmful anthropocentrism. Barbour (1980) and Passmore (1974) have lamented the domination of humans over nature; both regard the Jewish and Christian traditions to be the cause of extensive abuse. Two assumptions can be distinguished in this debate: *"Western culture is one of Mastery over nature"* and *"Christianity is the basis for this domineering attitude"*. Most theologians today recognize that not only Christianity but religions in general *"are key shapers of people's world-views and formatters of their most cherished values"* (Tucker and Grim 2001). This recognition broadens the debate from White's analysis of Christian morality to the effect that any religion or world view might have on attitudes towards nature.

Whereas the philosophical and theological literature on attitudes towards nature has expanded massively due to the debate, the empirical foundation does not provide satisfactory answers to accept or reject the hypotheses stated above. Starting with the first hypothesis, on Mastery over nature, empirical studies tend to focus primarily on the images of human/nature relationships among special groups like farmers (Kaltoft 1999), women (Modelmog 1998) or children (Nevers 1997; Kahn 1999). Examples of broader studies are Kellert's (1989) quantitative research on attitudes towards animals in American culture, the study by Buijs and Filius (1998) on images of nature in the Netherlands and studies applying the New Environmental Paradigm (NEP) Scale of Dunlap et al. (2000). This widely used scale consists of 15 items to measure an environmental world view. [5]

The research group Social Environmental Sciences, Nijmegen, has developed a general instrument to measure the image that people have of the human/nature relationship, the Human and Nature (HaN) scale. The multidimensional HaN-scale can measure ecocentric attitudes like the "Partner" and the "Participant in Nature", whereas the NEP-scale can only express a certain degree of anthropocentrism. This is a serious limitation considering, for instance, that Buijs and Filius (1998) have shown that 92% of the Dutch respondents acknowledge that nature has intrinsic value. In Norway and Sweden [6] these figures are 83% and 78% respectively. The tendency of the Dutch population to opt for a more or less eco-centric human/nature relationship also has become clear in recent studies of van den Born et al. (2001), de Groot and van den Born

[5] Notice that beside the social scientific research as mentioned, a new direction towards more empirical studies is emerging within philosophy.

[6] Grendstad and Wollebaek Grendstad, G. and D. Wollebaek (1998). "Greener still? An empirical examination of Eckersley's ecocentric approach." Environmental Values **30**(5): 653-675. found that of a sample of n = 965 from the general public in Norway, 83% agreed strongly or mildly that "all ecosystems, however small and insignificant, have a right to exist", while 76% found that pristine nature must be saved even if it is not in the interest of humankind. Analogous acknowledgements of the intrinsic value of nature come from 79% of a general public sample (n = 978) in Sweden Widegren, Ö. (1998). "The new environmental paradigm and personal norms." Environmental Values **30**(1): 75-100., and from approximately 80% of a sample of 71 college students in the US Thompson, S. C. and M. A. Barton (1994). "Ecocentric and Anthropocentric Attitudes toward the Environment." Journal of Environmental Psychology **14**: 149-157. In the Netherlands Buijs, A. E. and C. M. Volker (1997). Publiek draagvlak voor natuur en natuurbeleid. Wageningen, DLO-Staringcentrum. 92% of the respondents (n = 1999) agreed with the statement "nature is important for itself, independent of its functions for mankind".

(2003), and van den Born (2006), which reveal that most of the respondents see themselves as a "Steward of Nature" (endorsing the idea that they are responsible for nature) or as Participants in nature (seeing themselves as belonging to nature).
These results challenge the generally accepted image of Masters over nature, which tends to dominate the philosophical debate triggered by Lynn White and others.
The present study broadens the perspective of the HaN-scale research in that it also includes religion as a possible shaper of the human/nature relationship. Most empirical studies on religion and the environment focused on Christianity in relation to environmental concern. Some had a marginal representation of environmental concern with only a few items, mostly on the amount of money that should be spent on environmental issues (Greeley 1993; Guth et al. 1995; Boyd 1999). Others broadened the concept of environmental concern by the inclusion of items on Mastery over nature (Hand and Van Liere 1984; Shaiko 1987; Woodrum and Hoban 1994), which makes these studies more in line with White's hypothesis. Yet, like Shaiko (1987) states, it seems inadequate to study Mastery-over-nature as the only human-nature relationship among religious individuals. He suggests that the biblical image of Stewardship should get more attention. Eckberg and Blocker (1996) attempted this, but their items, on animal rights and sacred nature, did not give a full representation of a Steward. [7] The most extended elicitation of the human/nature relationship among religious respondents has been done by Schultz, Zelezny and Dalrymple (2000) who used the revised NEP-scale in 14 different countries. Unfortunately, their one-dimensional analysis of the NEP-scale does not give further insight in the different attitudes towards nature. Their study was, together with the international study of Hayes and Marangudakis (2000) and the German study of Kalbheim (2000), one of the first surveys that expanded the scope beyond the borders of the United States. Kalbheim (2000) indicated that church members adhere more to a moderate anthropocentric relationship with nature. In his study, the non-Christians were more likely to adhere to the idea of "inverted hierarchy", that sees humans as insignificant and small in comparison to nature.
The results of most studies show that the link between adherence to Christianity and environmental concern is rather weak or non-existent. Only a few significant correlations were found, for instance between belief in God and less support for environmental spending (Greeley 1993) and between belief in the Bible as the literal word of God and low levels of environmental concern (Eckberg and Blocker 1989).
This study explores how humans espousing various world views (secular, Christian, Buddhist, Muslim, and Native American) regard nature. Our earlier study (Van den Born et al. 2001; De Groot and Van den Born 2003) has shown that people, in general, no longer adhere to the viewpoint that humans have the power or right to "lord over" nature. In this study we continue to examine evidence, as provided by a variety of respondents, that attitudes toward nature are tending toward models that value Stewardship, Partnership, and Participation.

[7] Their earlier work Eckberg, D. L. and T. J. Blocker (1989). "Varieties of Religious Involvement and Environmental Concerns: Testing the Lynn White Thesis." Journal for the Scientific Study of Religion **28**(4): 509-517., however, included a Steward-like item in their questionnaire ("natural resources must be preserved for the future, even if people must do without"), but this goes unacknowledged in their analysis.

In contrast to most previous research, this study mainly consists of in depth interviews carried out among citizens of Victoria, British Columbia. At the same time, a small questionnaire was conducted based upon the HaN-scale. Canada makes an interesting setting for this study due to the presence of immigrants from various cultural backgrounds. This enables us to compare and contrast the basic attitudes towards nature among different religious groups in the same environment. The Canadian setting is not only suitable for studying Christian and secular attitudes to nature, but also Muslim, Buddhist and Native North American views. [8]

Victoria is the location of this study due to the presence of the Centre for Religion and Society there. Victoria is on the most southern point of Vancouver Island and surrounded by the Pacific Ocean. This city of approximately 300,000 [9] citizens still retains something of the old English colonial style with its many parks and gardens. The moderate climate permits dense deciduous and pine rainforests to flourish and attracts many elderly who have retired after spending many years in harsher climates in other parts of the country. At the same time, the university attracts many young people which makes Victoria known as the *"city of newly wed and nearly dead"*. The parks and gardens, grand nature on the West-coast and the specific demography make Victoria a very green city. It may be assumed that on average, the respondents of this study have more 'nature-friendly' images on the human/nature relationship than most Canadians have.

With Geertz (1964), we interpret religion as one perspective among many others that together constitute culture. The religious perspective differs from the other cultural perspectives in that it moves beyond the realities of everyday life and it accepts a wider, metaphysical reality. This distinction between religion and other cultural perspectives will serve as a starting point for our study. Notably the interviews will focus on "meta-physical" issues. At the same time, religion and other perspectives influence each other; we cannot treat them as independent factors.

We start with a concise overview on human/nature relationships as described in philosophical and theologian literature. Subsequently, the methods and results of the interviews and the survey are presented, followed by the discussion.

Philosophical images of the human/nature relationship

Passmore (1974) and Barbour (1980) were among the first who made classifications of human/nature relationships. Passmore only distinguished three (anthropocentric) attitudes: Despot, Co-operation with nature, and Stewardship. Barbour also describes an ecocentric image, "Unity with nature". Apart from Rodman (1983), mainly Dutch philosophers and scientists further developed classifications of human/nature relationships (De Groot 1992; Kockelkoren 1993; Zweers 2000). In this study we used

[8] It can be stated that the inclusion of Chinese Buddhists, Gujarati Muslims and Native Americans makes this study non-Western which makes a further investigation of cultural anthropological research appropriate. Yet, we decide not to elaborate on this matter since anthropological studies mainly focus on the function and meaning of cultures (informants) and not so much on the perceptions of individuals (respondents). Moreover, the respondents can be expected to have adapted western values since they are born in Canada or have lived there for at least one decennium.

[9] http://www.statcan.ca.

the basic classification of Kockelkoren, roughly consisting of Master, Steward, Partner and Participant. [10]

- In the image of the Master, humans stand above nature and may do with it whatever they want, not bothered by moral restraints or knowledge about nature's fragility. The Master trusts economic growth and technology to solve possible environmental problems.
- The Steward stands above nature but above humans is God. Nature is a gift of God to humans and we have the responsibility to care for nature. In the secular version of Stewardship this responsibility is towards future generations rather than to God. We have this responsibility towards God (or in the secular variant towards future generations).
- The Partner stands side by side with Nature. Nature has its own status, not under humans but rather beside them. Nature unfolds in its own independent value. Humans and nature work together in a dynamic process of interaction and mutual development.
- The Participant is part of nature, not just biologically, but with a sense of (spiritual) belonging. Being part of nature is important for the identity of the Participant. Humans are not inferior to nature, but it belongs to the human possibilities to participate in nature like this.

Religious images of the human/nature relationship

In this section we focus on basic attitudes towards nature according to the religious traditions, Christianity, Islam, Buddhism and the tradition of North Native people. Note that descriptions as given below are merely general statements based upon theological literature and therefore might deviate from the very diverse interpretations of individual believers within each religion.

Christianity regards nature as a gift from God to humans. In this theocentric cosmology humans are considered spiritual beings and their place is under God and the angels but above the non-spiritual nature. This leads to a dualism wherein man as a spiritual being is not part of nature but stands above it. Yet, he does not own nature; he is God's servant who has to take care for nature in His name. According to Kinsley (1995), some critics regard Christianity as the cause of the ecological crisis, because it spreads ideas of human's domination over creation, the elevation of spiritual beings and the desacralisation of nature. Although most of these critiques have counterarguments based upon the bible (Kinsley 1995), these despotic ideas can easily be found in the thoughts of the reformers.

[10] See for a more detailed overview van den Born Van den Born, R. J. G. (2006). Implicit Philosophy : Images of the people-nature relationship in the Dutch population. In: R. J. G. Van den Born, R. H. J. Lenders and W. T. De Groot Visions of Nature, a scientific exploration of people's implicit philosophies. Berlin, lit-verlag: 61-84. and Master thesis of de Groot De Groot, M. (2003). The sea and I, an interdisciplinary research on the relation between humans and nature among the population of Victoria, Canada. Department of Social Environmental Sciences. Nijmegen, Radboud University Nijmegen: 127.

Sciences. Nijmegen, Radboud University Nijmegen: 127. at ftp://ftp.sci.kun.nl/pub/ucm/Mirjam/ScriptieMdeGroot.pdf.

Since Protestants are selected as the Christian subgroup in the empirical study and due to the large amount of literature on Protestantism some elaboration on the vision of nature of the reformers will be given here. According to Luther and Calvin nature is only interesting in terms of its relevance to humans. Nature is *"standing under the left hand of God, the wrathful, the alien hand of God"* (Weber 1930). Nature cannot save our soul because it participated with humans in the fall and is dragged down into a corrupt state (Weber 1930). Nature is therefore empty of God's presence; it is only a background of something much more important, the salvation of the human soul through Christ. Only the elect are able to read the revelation of God in nature, or in the words of Calvin, only then have we *"the natural ability to mount up unto the pure and clear knowledge of God."* Until that time humans emulate God and are a governor of nature, direct it and control it, remoulding it to God's glory (Keller 2000).

In Islam the idea of nature as a gift from God to humans also plays a prominent role. Unlike the bible, the Qur'an is very precise about nature; it is *"a manifestation of God's almighty power"* (20:5) *"Withersoever you turn there is the Face of God"* (11:115), because everything God creates reflects this holiness. Since nature is a means through which God communicates with humanity, it is seen as the second Qur'an. The cosmic Qur'an complements the written one and both tell about God's revelation (Rockefeller and Elder 1992). Nature is regulated by natural laws directed by God's amr (command). All beings receive a unique command of God and make this command their telos or goal (Nomanul Haq 2001).

Human beings are also fully subject to the laws of nature and their amr is to be Stewards, or God's vice-regent (al-khalifah) on earth. They do not posses nature nor should they use nature for their selfish use. They are servants who have to obey God and respect His creation (Ammar 1995). The ability of humans to distinguish good from evil and assert their role as vice-regents of God does not make humans stand above the plants and animals, because they all come from the same life source (Nomanul Haq 2001). *"God created every animal out of water: of them there are some that creep on their bellies, others that walk on two legs and others on four"* (24:25). While Christianity distinguishes spiritual beings -God, angels and humans- from the non-spiritual nature, Islam opposes a sacred God to the whole of His non-sacred creation. *"None of the created are sacred except in their relation to God and in fulfilling the purpose of God's creation"* (Ammar 2001).

In Buddhism the world is seen as a holistic interconnected cosmic unity in which humans are just one part among other creatures. There is no separation between humans, as spiritual beings, and plants and animals, [11] since all sentient beings are composed of a spiritual and a non-spiritual element. This becomes even clearer in the Buddhist teachings of rebirth and karma. The system of rebirth makes clear that all sentient beings are interlinked and equitable, not only because they are all made out of spiritual and non-spiritual components but also because they can actually become another sentient being in another life (Gross 1995; Swearer 2001). In this web of interconnectedness wherein all causes have an effect, every entity can identify itself on two levels; the individual and the whole. On the individual level, the value and uniqueness of every individual entity is acknowledged. Every entity is in an ever-

[11] In contrary to Chinese Buddhism some Japanese teachings also perceive non-living entities like stones and water as spiritual beings.

changing process due to its relations with other (changing) entities. On the level of the whole the entity merges into *"the entire field of interbeing"*, with the whole field of interrelationships. By combining the attention for the individual life forms with the attention for the whole cosmos, Buddhism prevents a domination of the individual over the whole (anthropocentrism), or vice versa like in holism (Barnhill and Gottlieb 2001). Since human morality has a direct effect upon natural processes, humans should renounce greed. Driven by greed, we deny our fundamental place in nature; our interconnectedness with all the other entities in the web of being. It will only *"turn us into heedless emotional turmoil"* (Gross 2000). Suffering is seen as an inextricable part of life that is partly caused by human ignorance and unnecessary violence. Therefore humans are expected to act in ways that minimize the amount of suffering inflicted on all other sentient beings (Kinsley 1995).

The religion of North American First Nations resembles those from the East in their acknowledgement of a holistic interconnected cosmos and respect for all creatures. In contrast to (Chinese) Buddhism, Native traditions consider all natural creatures and elements to be spiritual, including all elements. Moreover, all things are related as members of one universal family, born from one father, the Sky and one mother, the Earth herself. *"All of nature is in us; all of us is in nature."* [12] The kinship relation with the local land and all the creatures living on it is especially strong (Grim 2001).

Very different from the absence of a God in Buddhism, Native traditions consider all of creation to be sacred or divine. *"We should know that He is within all things: the trees, the grasses (. . .) and even more important we should understand that He is also above all these things and peoples."* [13] The Creator not only created all things but also has a continuing association in and through all of creation, since His presence is within His work (Turner and Atleo 1998). Humbleness in relation to the Creator's gift is manifested in rituals like offerings, fasting, cleansing and prayers according to a traditional protocol. Before taking a life, permission has to be asked from the Great Spirit and all parts of the creatures that are killed have to be used. It is disrespectful to waste food, play with it or refuse it when it is offered. In order to keep the cycle of life intact, the bones have to be given back to nature to give the creature the possibility to gather himself and return to the earth again (Sewid-Smith 1995).

Methods

We used a mixed method of in depth interviews and a small survey. The 27 semi-structured interviews were held among citizens with various religious backgrounds living in Victoria, BC. The first author carried out the interviews face-to-face, which took between 75 and 90 minutes. Several criteria were formulated for the selection of the respondents. First, they should be lay people. This meant the exclusion of academics in this field, religious leaders, and environmentalists. Second, we chose four religious groups that diverge greatly; two Western religions (Christianity and Islam) and two

[12] Pete Catches, Lakota elder, quoted in Lame Deer and Erdoes Lame Deer, J. F. and R. Erdoes (1972). Lame Deer, Seeker of Visions. New York, Simon and Schuster.

[13] Frank Black Elk, Oglala-Sioux, quoted in Brown, J. E. P., Ed. (1953). The Sacred Pipe, Black Elk's Account of the Seven Rites of the Oglala Sioux. Oklahoma, University of Oklahoma Press.

"Eastern" religions (Buddhism and Native traditions). [14] We then narrowed each religion in order to get more homogenous research groups. Due to their accessibility, we chose to select members of the United Church of Canada, [15] the Ismaili community [16] and Chinese Buddhists. Another reason for the selection of Chinese Buddhists is that many are raised in the tradition, whereas many Tibetan Buddhists in Canada converted to Buddhism later in life.

Since the Native Americans lack a traditional religious institution, the Victoria Native Friendship Centre [17] offered assistance with the selection of Native respondents. These respondents had residence of Victoria in common, but belonged to different tribes. Nevertheless the cultural differences were small since all respondents had their roots in the south of the Canadian West coast. Finally, we added a fifth research group that consisted of citizens who defined themselves as secular. All religious groups were equally represented among the respondents resulting in five members of the Church of Canada, five Ismaili Muslims, six Chinese Buddhists, five Native Americans and six secular respondents. Within each religious subgroup we attempted to equally represent sex, different educational levels and ages.

As a result of the selection of denominations within four religions it is not possible to give results on the level of for instance Buddhism or Islam as a whole. The small number of respondents per religious group also makes a generalisation impossible. Nevertheless, this study is rich in its description of a wide variety of human/nature relationships among both eastern and western religions. It also gives more insight in the way in which respondents link their religion to their relationship with nature.

The director of the Centre for Studies in Religion and Society was the most suitable person to find a contact person for every religious group, due to his contacts in the field. Each contact person asked one or more members of their religious institution whether they were interested in an interview about nature. We then telephoned the members to give them more information about the study and to invite them for an interview. More respondents were found via snowball sampling.

The interview consisted of two parts. The first part dealt primarily with the respondent's Visions of Nature. The interviewer showed ten photographs of the coastline of Vancouver Island and asked the respondents to select the photos which they would call "nature". The respondents then were asked to sort the photos from the most natural to the least natural. Further probing revealed their reasons for calling one picture more natural than the other. Subsequently the interviewer asked questions on the naturalness of humans and on the spirituality and sacredness of nature. The photographs presented

[14] These religions were chosen based upon the amount of literature on the human/nature relationship.

[15] The United Church of Canada is a configuration of the Canadian Presbyterian Church, Methodist Church, Congregational Union and the General Council of Union Churches (http://www.united-church.ca/ucc/history.htm).

[16] Ismailis represent the second largest shi'i Muslim community after the Twelver Shia. The Ismailis and the Twelvers parted ways over the succesion to the great, great grandson of Ali and Fatima, Imam Jafar as-Sadiq, in 765. While the Twelver Shia gave their allegiance to the Imam's youngest son, the Ismailis transfer their allegiance to his eldest son Ismail (www.akdn.org/imamat.html).

[17] The Victoria Native Friendship Centre mandate is to meet the needs of Native people in the Greater Victoria and by providing them with services and information designed to enhance traditional values and cultures of the Native Peoples (http://www.vnfc.ca/home.html).

the coastline with varying degrees of human activities and artefacts. All photos were taken with a standard lens in order to make the photos in accordance with the actual scale relationships that are found in the direct perception of the landscape (Coeterier 1983). Eight photographs of Victoria's coastline were taken during the same afternoon, so that the light, the season and the weather circumstances were equal in each picture. In a study of (Brown and Daniel 1987) respondents reacted more positively to photos that are taken in a season yet to come than on pictures taken in the previous season. Therefore the pictures were taken in the autumn, the same season as when the interviews took place.

The second part of the interview mainly consisted of the ethical question; "How should we treat nature?" Two test interviews made it clear that this question was too broad for respondents to give an in depth answer. We decided to retain the question about the 'treatment of nature' so as to evoke an initial "blank" answer. The interviewer then explained the four attitudes towards nature; Master, Steward, Partner and Participant. Subsequently the interviewer asked the respondents for their opinion about attitudes as a whole and about the ideas that underlie the attitudes. Since social desirability is a difficult problem to tackle when dealing with this issue, we tried to overcome this by probing on every answer to reveal the respondent's deeper thoughts. The interviews were recorded on tape, transcribed verbatim and entered into Kwalitan, a computer program designed to deal with unstructured texts.

These interviews were supported by a first attempt to use the HaN-scale beyond Dutch borders. The aim of this survey was to reveal if the respondents distinguished the Master, Steward, Partner and Participant image. In addition to the 14 items of the HaN-scale (Van den Born 2006), we developed 10 statements in order to adapt the scale to the (coastal) living environment of the respondents and to raise the validity of the survey. In line with our previous studies, questions were included to measure background variables like age, educational level and religious affiliation.

In contrast to the stratified sample of the interviews, we decided to take a random sample for the survey, as to make generalisation to the whole population of Victoria possible. The questionnaire was send to 300 randomly selected addresses from the yellow pages. Unfortunately, only 53 completed questionnaires were returned, which was partly due to the lack of a reminder and to the large number of out of date addresses which resulted in 32 returned envelopes. Almost 60% of the questionnaires returned, were completed by men, whereas according to Canadian Statistics, [18] the population of Victoria consists of an equal male/female split. The age and the religious backgrounds of the respondents are similar in proportion to the population of Victoria and British Columbia respectively. The population of Victoria consists of an equal male/female split. The age and the religious backgrounds of the respondents are similar in proportion to the population of Victoria and British Columbia respectively, [19] which resulted in only one respondent with an affiliation for an Eastern religion, with a Western religion and 30 non-religious respondents. Due to the low response, the survey can only give some first impressions against the background of the interviews that gave a deeper argumentation behind the images.

[18] http://www.statcan.ca/english/Pgdb/popula.htm#pop.

[19] http://www12.statcan.ca/english/profil01/PlaceSearchForm1.cfm.http://www.statcan.ca/english/Pgdb/demo30_96c.htm.

Results

This section will describe the results of the interviews followed by some impressions of the survey. For convenience of the reader we decided to call the respondents by the name of their world religion. We do not intend to make any generalisation what so ever.

Interviews

Images of nature

The ten photos were used to get insight in the respondents' image of nature. From these, the respondents could select the photos which they regarded as depicting nature.
The majority of respondents, from various religious backgrounds, selected a number of photos, while the others decided to select all photos. The majority explained that they selected only a number of photos because some showed too much human interference to call them nature, such as man- made structures. Especially photos of a high-rise building and a harbour were often rejected. The minority selected all the photos because for them, the presence of natural elements (the sky and the sea), or living entities (humans and animals) or greenery (the grass and the trees) on every picture was decisive:

I just think even though some of them have buildings and manmade structures on them, nature is so very much part of the landscape. And you know animals living under water and there is rocks and the clouds (...) so even though we have built things in the natural landscape, it is still nature.

Thus, after some probing all respondents regard man-made things as unnatural. Yet, for some respondents this is decisive to reject the more cultivated photos while for others this is not.

Humans as Part of Nature

The selection of the photos made clear that the respondents consider human interference as unnatural, but what about humans themselves, are they part of nature? All except one respondent concluded sooner or later that humans are part of nature. This exception was a secular man who explained that humans are above nature because we are on one of the top layers of the food chain. *"We eat the salmon. That to me seems probably ... if you want to admit it or not, it is an act of a higher creature feeling that it has the right to eat the salmon."*
The rest of the respondents gave various reasons why humans are part of nature. Most mentioned was our dependence on natural resources like water and oxygen. Others called humans part of nature because we form a part in the *"chain of being". "We are made up out of all the elements that are found in nature."* Some religious respondents regarded humans as nature because its creation needs the involvement of a *"higher power"*. In the words of a Muslim woman: *"Humans are a creation of God, they are a natural being."* Two Buddhists clarify that it took the bringing together of many causes to

create both nature and humans: *"The consequence of so many things together so that we have human beings (...). The ground and the mountain and the trees ... There are many causes to make the ground there, the water there and the trees growing."*
Although a large majority concluded that humans are part of nature, many of the later responses on this subject showed their doubts about the naturalness of humans. First, some respondents got confused by the human ability to think. *"We have the brains," "we can use our wisdom"* and *"are self-conscious."* According to some this makes us different from the rest of nature: *"Obviously we are in position to change things more than every other species, so we are different, we are part of it but we have more responsibility, because of our brain."* Only a few respondents of those who earlier called humans part of nature put the rational capacities of humans above the abilities of the rest of nature: *"So I think at a certain point I think human is above nature."*
Second, many respondents let the naturalness of humans depend on their behaviour. If humans *"don't pollute", "treat it properly"* and *"don't make it unbalanced"*, then they are nature or more natural. *"Humans can be part of nature. If we consider ourselves one with the earth if we respect it well enough, then I consider us part of nature."* The respondents often give illustrations of more natural people like tribes in the Amazon or the Native Americans in Canada. At this point the interviewer confronted these respondents with the implication of their thoughts. Is one person more part of nature than the other, based upon their actions? Yet, all these respondents disagreed; *"You can't say that some people are a part of nature and some aren't. (...) We are all people and we all do something wrong."*
A third doubt on the naturalness of humans became clear when half of the respondents talked about a fundamental process of disconnection between humans and nature. Especially for the Native respondents this is an important issue:

Sometimes, you don't think about how we are connected, we become removed from it, we don't have to think about it, we go to the grocery store and buy our food and we don't see the bugs and animals that had a hard time because of what we are doing. We are not doing it ourselves; somebody else does it for us.

Many respondents add that this alienation from nature has emerged over time.
All Natives, many Buddhists, and some Muslims mentioned that humans could see God or spirits in nature as long as they have the right eyes. *"Wherever you see, the God is everywhere, if you know how to see."* They elaborated on the topic by saying that we forgot how to see. We got further alienated from the original spirit and spiritual contact with nature due to the development of the human intellect. The Buddhists primarily emphasised the lost connection with our own original spirit. The Natives stressed the lost connection with the spirits in nature:

To us we are told to listen to the water, the fire and we believe that trees can give us messages and that one time a long time ago the animals could all speak to us and we would be spiritually healthy enough to understand. So we are not as healthy as we used to be a long time ago.

Finally, many respondents doubted the naturalness of humans when talking about human creations. During the selection of the photos many respondents described nature as everything that was not made by humans. In doing so they tended to include humans but to exclude their artefacts. This raises the question whether these respondents regard humans as part of nature in all respects. In the words of one of the respondents who did not regard humans as part of nature; *"Those who say that humans are part of nature have a sticky question to answer whether the artefacts made by human beings are also part of nature."*

These points illustrate how the confusion on the naturalness of humans made the respondents swing between two different and even mutually exclusive images of nature throughout the interview. The first image of nature includes humans and under some circumstances man-made structures. The respondents sometimes explicitly referred to this image in terms of *"half fully nature"*, *"physical nature"* or *"partially nature."*

The other image of nature the respondents used is a nature without humans. This nature was there before humans came; it is *"not encroached on"* and was often called *"pure nature"*, *"real nature"* or *"spiritual nature"*.

Is Nature Sacred?

When asked whether the respondents believed nature to be spiritual or sacred, a strong connection with the respondents' religious background appeared. A large majority of the Christians and Muslims explained that God is present in nature because it is a gift of God. *"God is in the ocean. Wherever you see, the God is everywhere, if you know how to see."* This seems contradictive to the Protestant and Muslim teachings, which reject the actual presence of God in nature. Yet, in their answers, the respondents stress that God's presence in nature is solely acknowledged because nature is His creation. To them nature is a medium rather than home.

None of the Buddhist respondents believed that nature is a gift from the Creator. Some explained that they do not believe in a God who created nature: *"we say it is just there because all the factors come together"*. Other Buddhists stressed that the existence of a God above humans is not in line with their conviction that all of nature is on an equal footing. Nevertheless, all were attracted to the idea because nature feels like a gift, due to its splendour and richness. Some Buddhists liked the idea because *"it disciplines people"*. Most important in the visions of the Buddhists was the spirituality of nature. *"The original spirit is in all things (...) every animal, every plant."* Yet, some Buddhists thought the spirit was only in animals and humans, not in plants and trees. All Buddhists were convinced that the elements do not posses a spirit. *"Because water is a material object, and it cannot change its karma and its life and I won't think of it as even having a life."*

The Native respondents believe that all creatures and elements have a spirit that reincarnates after their death: *"Our ancestors can be the tree, or in the water, or go on top of a mountain and be up near the clouds. They are everywhere."* Moreover, they all thought nature to be the same as God. *"Mother earth is the Goddess, (. . .) the creator is not really above us, we are just all One."*

In total, three secular male respondents perceived nature as pure matter, without having

a soul or a spirit. The three secular women, on the other hand, believed that nature was spiritual. They thought that the beauty of nature was convincing enough to know that there is something out there. What this something is, was not clear to the respondents but the acknowledgement that nature is more than pure matter was an important reason for them to treat it with more respect.

Images of Relationship

During the second part of the interview the respondents could give their opinion on the Master, Steward, Partner and Participant image. First the interviewer gave the respondents a broad and explorative question on how we should treat nature.
Many respondents then named general terms among which *"preserve"*, *"harmony"* and *"respect"* were most popular. It seemed difficult for the respondents to describe what these words exactly signify. For instance, out of the 19 respondents that named respect, only 4 were able to describe it in other words; *"not very indulging"*, *"nothing should be wasted"*, *"accept the fact that we are smaller than nature and in a way less significant"* and *"not trying to change"*. The rest of the respondents elaborated on the disrespect of our current treatment of nature. *"We lose respect for nature. We tend to use it as if we own it and forget that the changes we are making to it are destroying and it cannot always rejuvenate itself."*

Mastery

All respondents responded negatively on the Master image, using words like *"arrogant"*, *"old-fashioned"*, *"destructive"* and *"immoral"*. Almost half of the respondents compared the Master of nature with Mastery among humans; the domination of the weakest, discrimination against women and blacks, and the unequal distribution of food in the world. Despite this negative reaction, many respondents are convinced that *"there are still many people who think that way"*. Many respondents point out that since we are nature ourselves, in the end the Master will destroy himself. *"If we damage something else it damages ourselves as well."*
All respondents rejected the hierarchical relation between humans and nature. Regardless of what image we discussed, all were convinced that humans should be a part of nature. Only one respondent considered humans to be above nature because we are on one of the top layers of the food chain.
Although none of the respondents completely shared the technological optimism of the Master, all of them thought that technology could help solve environmental problems. One exception is a Native woman who rejected the use of technology all together.

We don't need to make big machines. Like machines that can save a tree. I don't think that a tree wants to be saved if it is that tree's time to fall down and turn into compost, and turn into dust. We want that, we need that good soil to grow our food.

Steward

In accordance with the theoretical background, all Christian and Muslim respondents were enthusiastic about the idea of Stewardship and they thought other members of

their religious community would prefer this image as well. They especially liked the idea that humans have responsibility for nature, because this would oblige people to solve the environmental crisis. Yet, like almost all respondents, they stressed once again that humans are part of nature. The secular respondents differed from the Christians and Muslims in their preference to a Steward with responsibility towards future generations instead of God. Most Buddhists thought that *"nature is a gift of God"* was a beautiful idea, but they did not believe it was true.
Finally, the Natives rejected all elements of the Steward. Above all, they disagreed with the separation between God, humans and nature. *"I think that we are just all one, we are all connected."* Secondly, three out of five Natives questioned the need to take care of nature, because nature can take care of itself. One Native respondent spoke about the Steward attitude as part of their treaty negotiation. Although this western idea does not really represent the attitude of most Natives, the word Steward was used to explain to the colonists that the Natives did not want to exploit nature. *"We had to try to use some words to say that we were there looking out for nature."*

Partner

Only a few respondents directly agreed with the Partner. *"When you see some beautiful Indian art work and carving (...) I think it is nicer to see humans working well with nature like that than having nature untouched."* Most of the respondents disliked the Partner because it stresses the independent value and own identity of both nature and humans. These issues obviously appealed less than the unity between humans and nature. Moreover, many respondents disagreed with the equality of humans and nature. Nature is vulnerable and cannot do anything else but to endure the human impact.
The reciprocity between the Partner and nature forms another problem. Is it possible for humans to communicate with nature or to fulfil its goals? Among the collected data three different opinions on this topic can be discovered. First, three secular male respondents perceived nature as a process that will never reach a goal. The idea of having a goal is a human concept that does not apply for nature. *"Nature is just an evolving process, the earth will evolve, it will happen, most of the things will happen randomly."* All Muslims, Protestants and three secular male respondents thought that nature has a goal that humans can understand to some degree by using their knowledge and brains. We know for example that nature wants to survive, that it does not want to be hurt and that it wants to be left alone. *"When we see cracks in the earth we know the earth is too dry."* A third group, consisting of Buddhists and Natives, thought humans can spiritually communicate with nature. According to most of the Buddhists, meditation makes us able to listen to the original spirit or Buddha nature that is present in all animals and plants. All of the Native respondents thought we can literally hear nature as long as we are willing to listen:

Nature isn't silent, it is actually screaming out to us, people are just not listening they are not there, their ears are blocked their eyes are covered, because they don't want to see, they don't want to feel anything.

Participant

All of the respondents were pleased to hear an attitude wherein humans are part of nature. Nevertheless, many had difficulties to distinguishing between a biological belonging to nature and an emotional or even spiritual connection. According to the three secular male respondents, humans do not have a spiritual connection with nature. Two of them, who were highly educated, thought that so-called spiritual experiences in nature were more of an emotional response to the beauty of nature.

It is just awareness that we are part of it and also of course when you look at the night sky, bright clear night, you are obviously attracted by it. It's an awe type of feeling you get. (...) It is an overwhelming sense, you are part of it. I would call it connectedness or emotional feeling you have with it.

The two secular female respondents on the other hand believed that there is some kind of spirit in every living entity. *"I mean I feel a God in you, in me, in all of these things. They are all existing, growing."*

All of the Muslims and Christians felt a spiritual connection when they are in nature. Most of them cannot exactly describe it; *"Really I don't know the answer to this, it is full of mysteries. Just like the mystery of God. Why are we here? It is a big mystery."* Two Muslims are more concrete, according to them we are able to see God in nature as long as we have the right spiritual eyes. According to the Buddhist respondents, humans can have a spiritual connection with other humans, animals and plants, due to their Buddha nature. Finally, the Natives were most clear in their description. Supported by traditional teachings and rituals, they have the possibility to connect with all of the spirits in nature.

The Native and Buddhist respondents were most fond of the Participant and they also thought other members of their community would prefer this image above the others. The Native respondents were especially enthusiastic about the Participant idea because it describes the traditional way of thinking, *"the way I was taught"*. Many respondents did not regard the Participant to be an attitude that fits within modern society. According to some we are really too far from nature to be a Participant. Yet, all of the Natives and four out of five Buddhists did not follow this line of thought; they still consider the Participant to be a possible and desirable attitude in the present age.

At the end of the interview the respondents could chose which image of relationship they liked most. Four out of five Muslims and Christians chose the Steward as the idea that best represented their opinion under the condition that humans should be part of nature and not above. The same numbers count for the Buddhists and Natives that adhered to the Participant idea. Only the secular respondents found great difficulties in finding an attitude that corresponded with their own opinion. They all chose more than one attitude or adjusted the attitudes in order to let them fit with their ideas.

Impressions from the survey

The factor analysis (Varimax with Kaiser Normalisation) of the HaN-scale consisted of four factors and explained 51% of the variance. [20] Since the factor loadings were rather high, we decided to take .450 as a criterion. The first factor contains 11 items and shows that the respondents distinguish a Steward, but not the theoretical one that stands above nature. Three Steward items, on conservation (.773), preservation (.885) and careful treatment of nature (0.896), have the highest factor loadings. The factor further consists of Partner and Participant items on humans as part of nature and on equality between humans and nature. Clearly the respondents here express an image of a Steward that is not above nature. The negative factor loadings on the (hierarchical) Master items (-.657, -.723, -.639) also support this.

The second factor contains five Participant items, which gives the impression that the respondents clearly distinguish this image. Factor three is a representation of an enlightened Master. This less reliable factor (Cronbach's alpha = 0.58) contains two Master items that express an idea to manage nature rather than to subdue it. The fourth and least reliable factor (Cronbach's alpha = 0.54), consists of two Steward items that represent an active involvement of humans in nature. In conclusion, the respondents did not exactly reproduce the four main groups of basic attitudes. Instead they made a clear distinction between a Steward who is a part of nature and the Participant. The distinction between the last two factors (enlightened Master and active Steward) is less convincing due to the low reliability. Therefore we did not submit these factors to further analysis.

In order to reveal the number of respondents that adhere to the Steward who is part of nature and the Participant, we calculated the mean level of agreement to the items making up the two factors, taking a mean of 1 ("agree") or higher as criterion. Note that following this method, a respondent can be ascribed to more than one image. As it turned out, 72% of the respondents adhered to the image of the Steward that is part of nature, while 15% of the respondents adhered to the image of the Participant.

The respondents were split into respondents without a religious affiliation and respondents with an affiliation to Christianity (Protestantism or Catholicism). [21] The secular respondents tend to score slightly higher on both the Steward and the Participant image. Due to the very low probability value ($p < 0.1$) the influence of Christianity on the adherence to the Steward and Participant image cannot be proved based upon this survey. Note that in contrast to the interviews, the respondents of the survey are not necessarily practising Christians but have an affiliation with Christianity.

[20] The scree plot of the HaN-scale did not clearly indicate whether a distinction between three, four, five or six factors would lead to the most significant classification. Yet, only a factor analysis into three groups was possible because the extraction of all other analyses was terminated.

[21] In order to split the respondents into two groups a Wicca and a Theosophist were excluded from the analysis.

Discussion

Reflecting on the debate initiated by Lynn White, two hypotheses were tested: the anthropocentrism of Western culture and religion as a shaper of attitudes towards nature. To test the first hypothesis, we first empirically scrutinised the concept of nature. For all respondents the intensity of human interference in the landscape determines whether they regard it as nature. Although the interviewees regarded man-made structures as unnatural, almost all of them were convinced that humans are part of nature. The naturalness of humans was a difficult subject for the respondents. Their rational thinking seems to tell them that we are part of nature, but for most this is not confirmed by their daily experiences. They do not feel connected with nature and therefore no longer part of it. This dichotomy can also be found in the two different and even mutually exclusive Visions of Nature that each respondent expressed throughout the interview. One vision of nature includes humans, while the other vision is of a pure nature that is not encroached on because it excludes humans and all their interferences. That the confusion on humans as part of nature made the respondents swing between two mutually exclusive Visions of Nature is an important insight for future research. This phenomenon might also take place during the completion of a questionnaire on nature or the environment, sometimes resulting in illogical or even conflicting responses that might be difficult to interpret.

When looking at the human/nature relationships, we discover that the hypothesis of Lynn White on Mastery over nature can be rejected, based upon our findings. Almost all respondents of the interviews reacted negatively on the Master as well as on any hierarchical relationship between humans and nature. This aversion was expressed by almost all respondents and was supported in the survey by the negative reactions to all HaN-scale items that stated humans above nature.

Further, both the practising religious respondents of the interviews and the randomly selected respondents of the survey were most attracted to the Stewardship image. Yet, due to their rejection of hierarchy between humans and nature, the respondents chose to adapt the traditional Steward into a Steward that is part of nature.

The Partner image did not get much support during the interviews due to its emphasis on the equality between humans and nature. The Participant was a good representation of the visions of the eastern religious respondents (Buddhist and Native).

The respondents with a western religion were rather negative about the Participant, mainly because they did not find it possible to feel a sense of belonging in a society that is so remote from nature.

The results show that the philosophical classification of human/nature relationships makes new empirical insights possible that were overlooked in previous studies due to their strong emphasis on anthropocentric attitudes. This is especially true for the NEP and for the quantitative studies that empirically test the White hypothesis on religion and environment. The philosophical classification presents a practicable overview of environmental values and relationships that evoke interesting thoughts among lay people on issues like the reciprocity of nature, the image of the Participant and nature as a gift of God. This also appears to be the case in recent work of our research group in the

Netherlands. A qualitative study carried out by van den Born (2007) shows that the Dutch are very much attracted by the image of the Participant and the idea to take responsibility for nature.

The results of this study also show that the philosophical classification does not exactly coincide with the human/nature relationships expressed by lay people. The Partner, an important image for philosophers, did not get much support of the respondents. Moreover, the respondents adjusted the philosophical Steward, because to them it is a self-evident idea to be part of nature and at the same time responsible for it.

In philosophical literature this does not appear to be a consistent option: *"how can you be part of something and yet responsible for it?"* (Van den Born 2007). Lay people appear to have no difficulty with this idea, however, and they would appear to be right. As an example from daily life, we may think of a class representative, who is responsible for his/her fellow students, but at the same time is not above them. Different gradations of equality are possible within the notion of being responsible for and part of a community at the same time. With regard to future research the classification and the HaN-scale should be adjusted as to give respondents the possibility to choose for a Steward that is part of nature.

The interviews showed a strong relation between the religious background of the respondents and their image of nature. Especially on the question whether nature is pure matter, spiritual or sacred, the answers are very much according to the theological literature. Almost all Protestants and Muslims considered nature as a gift from God that was neither sacred nor spiritual. All Buddhists regarded nature as spiritual due to the Buddha nature, but they did not perceive nature as sacred. The Natives thought nature was both spiritual and sacred. They see the world as a person, a mother, a living entity and they use many metaphors to personify nature. This personalised world view can be put on one extreme of a continuum with on the other extreme the materialistic world view that was expressed by two highly educated secular men. They perceived nature as pure matter and thought it was inappropriate to think of nature in any spiritual way. Four out of five Muslims and Protestants regarded the Steward as the most appropriate attitude towards nature, while almost all Buddhists and Native Americans preferred the Participant. Despite the adjustment of the Steward by all Christians and Muslims, none of the respondents who chose the Participant wanted to make any changes in the concept. The secular respondents all chose more than one attitude or adjusted the attitudes in order to let them fit with their ideas.

The survey findings corroborate the prevalence of the Stewardship and Participant images in Canadian society. The factor analysis showed that here too, Stewardship was seen as Stewardship in nature. In contrast to the interviews, the survey did not show a link between religion and human/nature relationships. Due to the random selection of citizens, the survey included mainly respondents with a Christian or no religious affiliation. Our analysis focused only on Christianity and did not show a link between Christianity and human/nature relationships. This is in line with many previous studies as described in the introduction.

The Partner was hardly chosen as the most appropriate relationship with nature during the interviews. Nevertheless, the reactions to the notion of reciprocity suggest a relation

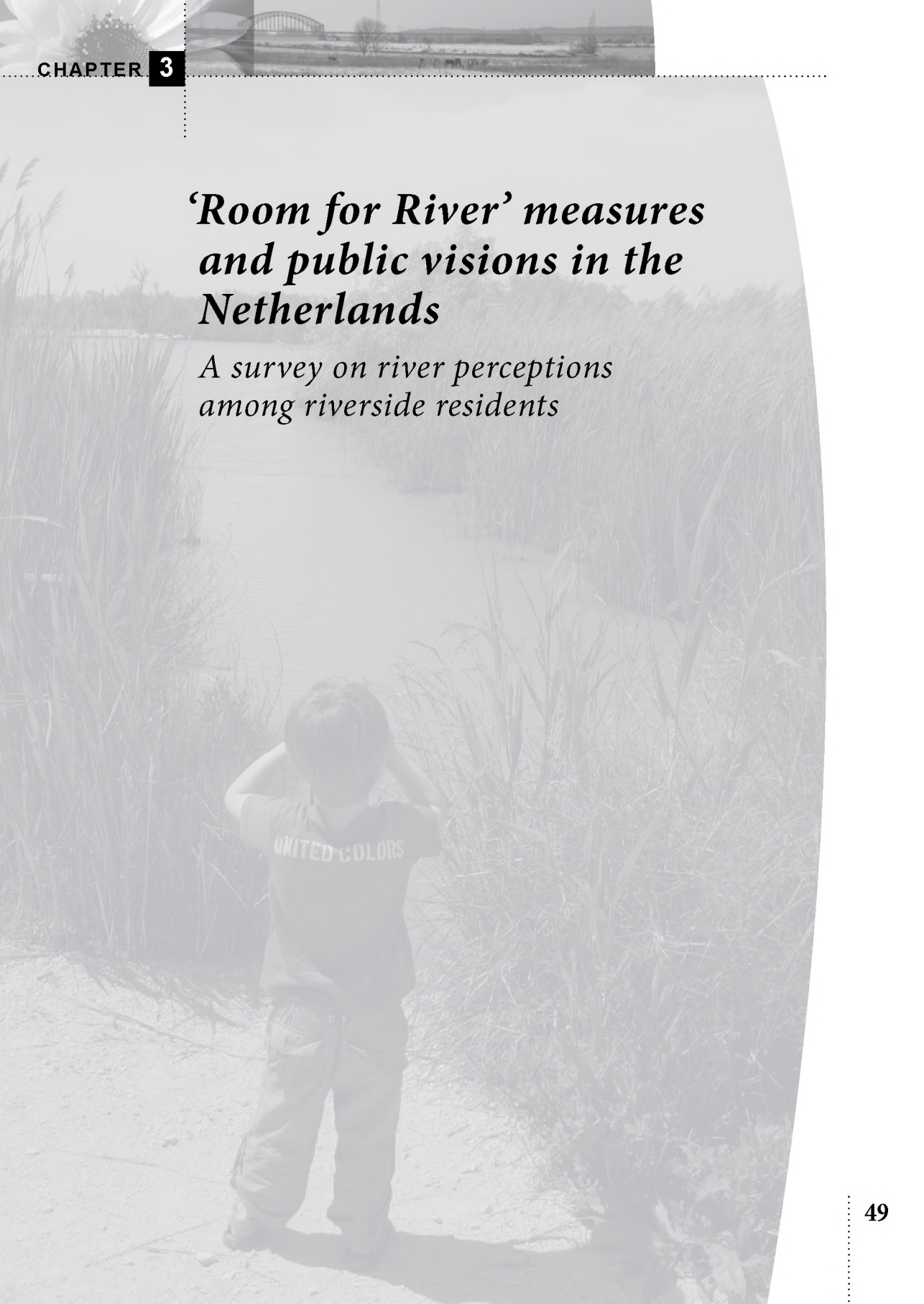
between religion and attitudes towards nature. All Muslims, Protestants and female secular respondents thought that nature has a goal, which humans can understand if they use their knowledge and brains. The Buddhists and Natives thought it is possible to be aware of the goals of nature on a spiritual level, through the Buddha nature or because spirits in nature talk to us.

Despite the small number of respondents, these findings shine a new light on possibilities for future empirical research to study in depth the link between religion and human/nature relationships. Future studies that continue to include the world's religious traditions will be especially helpful in understanding the relationship between humans and the natural world we all inhabit.

In the last century, scholars such as the historian Lynn White, Jr., assumed that Christian believed that God created the world and gave human beings permission to exploit the fruits of the earth. As we move into the 21st century, adherents of all faiths as well as secularists seem to be embracing a more relational attitude toward nature, wishing to extend care and concern to the earth as responsible Stewards, and, in the case of Buddhists and Native Americans, seeking intimacy and Participation in the rhythms of nature.

'Room for River' measures and public visions in the Netherlands

A survey on river perceptions among riverside residents



'Room for River' measures and public visions in the Netherlands

A survey on river perceptions among riverside residents

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Dutch river management is moving from traditional dike reinforcements towards 'Room for River' measures to assure flood protection and serve other societal goals. With that, the engineering paradigm shifts from Mastery over nature to a more Partnership-like attitude towards nature. Are these values shared by Dutch riverside residents? And are the measures proposed under the new paradigm accepted? This paper investigates these two questions, based on semi-structured interviews and a survey in communities along the floodplain of the river Waal (i.e. Rhine). The analyses show that even though their Visions of Nature are remarkably ecocentric, Partnership with nature is not the dominant idea within that ecocentric realm. Partly as a consequence of that and partly because the respondents do not perceive the measures as natural, the investigated room-for-river measures are not endorsed.

[22] This study was supported by funds of NWE-ENO (Interreg IIIb "Freude am Fluss") and BSIK Leven met Water. The authors would like to thank Riyan van den Born for her overall support and critical comments on earlier versions of the questionnaire.

Introduction

As inhabitants of a delta the Dutch have a long history of struggle against the water. For centuries dikes have been built and raised to protect and to reclaim land. Along the rivers this resulted in ever-higher dikes and narrow floodplains, a risky combination that primarily fulfills short term needs (De Groot and Lenders 2006). Today, Dutch water policy is shifting towards more sustainable ways for river flood protection. The new approach is to give rivers more room; to widen and re-naturalize the riverbeds by relocating dikes and the creating side channels. The 'battle against water' is changing into a 'living with water', a new discourse that is about to prevail in Dutch water policy (Wiering and Arts 2006). The image of struggle against the hostile waters is transforming into an image of harmonious Partnership with rivers that have lost their intimidating character, a true cooperation between humans and nature (De Groot 1987).

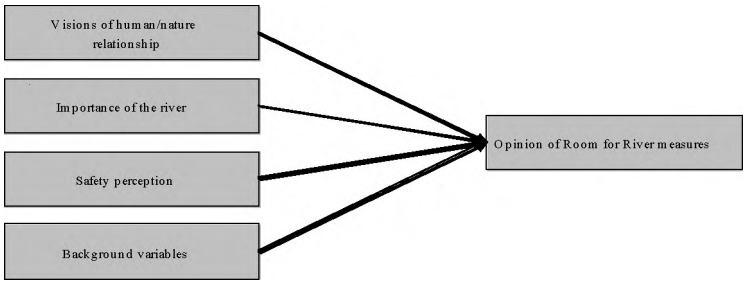
The paradigm shift has been the object of many studies (Van der Brugge et al. 2005; Wiering and Arts 2006; Van Heezik 2007). It has never been investigated yet, however, how these new ideas and new types of measures relate to visions and opinions of riverside residents. What do people think is the appropriate relationship between humans and nature? What do they think about measures such as dike relocations or side channel creation? And how, if in any way, are these two sets of ideas interrelated? These are the questions addressed by the present paper. The questions are particularly relevant since society's interest in water problems in the Netherlands has increased over the last decades due to near-flood disasters and climate change. At the same time, policy-making tends to become more participatory, with public involvement ranging from traditional hearings to intensive workshops and vision groups (Wiering and Arts 2006; De Groot et al. submitted) With that, an insight in the public perceptions of room-for-river measures becomes valuable for future river policies.

This study is partly based on the Visions of Nature instrument developed by Van den Born et al. (2001), to measure the ideas that people have on the relation between humans and nature. This scale elicits which vision of nature respondents adhere to: Mastery, Stewardship, Partnership or Participation. These studies have resulted in many new insights such as the great support for ecocentric relationships with nature (De Groot and Van den Born 2003; Van den Born 2006). Visions of Nature have never been used as a basis to predict public opinion on nature-related issues such as Room for River measures, however. This study will take a first step in that direction.

Apart from the humans vs. nature relationship, this study includes other variables that might influence the perception of Room for River measures. The evaluation of Buijs et al. (2004) on nature development projects in Dutch floodplains is a good starting point for the selection of variables. Their study includes indicators to measure people's perceptions of floodplains in terms of 'place attachment', 'recreation' and 'safety perception'. The interpretive investigation conducted by Davenport and Anderson (2005) is an even more valuable basis to select variables because of the inductive way the study was designed. They studied a wide range of meanings that community members attribute to the Niobrara River in Nebraska. Four dimensions emerged from their exploration; river as sustenance, river as tonic, river as nature and river as identity.

'River as sustenance' establishes the river as a scarce and highly coveted source of water and economic revenue. 'River as tonic' conveys the river as *"good for the mind, body and soul"*. 'River as nature' expresses the respondents' appreciation for the river's ecology, and 'river as identity' ties the river to people's sense of who they are.
In this paper, 'river as nature' is studied through the Vision of Nature concept. 'River as tonic' and 'river as identity' have been combined into one variable called 'importance of the river'. 'River as sustenance' was dropped because it was considered to be a minor issue to the riverside residents since very few earn their living by river related jobs or are confronted with the scarcity of the resource in their daily lives. The safety theme was added as a variable because it is a leading principle in Dutch water management. Since background variables, such as age or educational level are also likely to have an influence, these have also been added to the research model. This results in four different groups of independent variables that might influence the opinion on Room for River measures, depicted in Figure 3.1.

Figure 3.1 *The causal model of the research*



Four independent variable groups are expected to explain and predict the riverside residents' opinion of 'Room for River' measures

As Figure 3.1 clarifies, this study first addresses the variables separately and then explores what influence 'Visions of Nature', 'importance of the river', 'safety perception' and 'background variables' have on the perception of Room for River measures. In order to reach this objective, this paper will first elaborate on the content of the four variable groups. The research approach will be explained subsequently, followed by the findings on the Room for River perceptions. Then the results of the four independent variable groups will be presented, followed by a regression analysis to show their influence on the Room for River perceptions.

Methods

We will first describe the five groups of research variables.
1 *Visions of the human/nature relationship.* After the work of Passmore (1974), Barbour (1980) and Rodman (1983), the philosophical classification of human/nature

relationships got special attention of Dutch philosophers like Zweers (1995), Kockelkoren (1993) and de Groot (1992). The present study is based upon Kockelkoren's (1993) classification of four different images as respondents find it easier to distinguish between a small number of groups. The first image is *Master over nature;* an anthropocentric ruler that molds nature unfettered by moral restraints. By doing so, he conquers wilderness and chaos. *Steward of nature* is a less anthropocentric image of relationship, but in order to be a Steward, you still have to be higher ranked than nature. Stewards are more restrained than Masters, due to their responsibility to care for nature towards the creator or future generations. According to Zweers (1995), Stewardship becomes more ecocentric if it includes a recognition of nature's intrinsic value. It means that nature has its own value, apart from its usefulness (instrumental value) for people. The last two images fully recognize this intrinsic value, but give humans a different position with respect to nature. *Partners of nature* are on an equal footing with nature. They cooperate with nature in a dynamic process in order to reach mutual development (De Groot 1992). They regard nature as a changing process in which they can play an active role. Finally, *Participants in nature* are connected to the great Nature which overarches them. This spirituality is part of their identity (Zweers 1995).
Many empirical studies have captured some parts of this wide spectrum, such as Minteer and Manning (1999), Kaltoft (1999), Kellert (1989; 1993), the revised NEP-scale (Dunlap et al. 2000) that covers the more anthropocentric images and Mayer and Frantz (2004) whose connectedness to nature scale covers the ecocentric extreme. The broadest basis for analysis is supplied by the HaN ('humans and nature') scale developed by De Groot and Van den Born (2003), structured as 14 questionnaire items (with Likert scales). The present paper will apply an expanded version of the HaN scale.

2 *Importance of the river.* In the second variable group, the importance of the river, place attachment is the leading concept. Place attachment is studied by different disciplines, including geography, sociology and environmental psychology, and contains many different terms such has 'place identity', 'sense of place' and 'place dependence'. They all refer to the idea that places represent the meanings and emotions people associate with settings; *"what begins as undifferentiated space becomes places as we get to know it better and endow it with value"* (Tuan 1977, p.6). Besides the many phenomenological studies, several scales have been developed to measure the level of attachment (Shamai 1991; Williams et al. 1992; Cuba and Hummon 1993; Hidalgo and Hernández 2001; Peters et al. 2006). The variables used in this study are based upon the scale of Jorgensen and Stedman (2001), which measures 'sense of place' into three dimensions, namely identity (beliefs about the relationship between self and place), attachment (emotional connections to place) and dependence (perceived behavioural advantage of a place relative to other places). Because of the recreational values of floodplains, we have added a question to this group about the riverside as a place for leisure activities, to relax and recover.

3 *Safety perception.* The theme of safety perception is related to the more thoroughly studied concept of risk perception. For the present paper, the respondents were not asked to assess the risk (in relation to other risks). Instead they were simply asked if they feel safe against floods.

4 *Background variables.* The last group of independent variables consists of the respondents' demographics like sex, age, educational level, distance from and number of years living near the river and the frequency of their river visits. Other more ideological characteristics were religion, political party and the importance of a number of political issues like the combat of crime or nature conservation.

5 *Opinions on room-for-river measures.* The dependent variable group was composed of the respondents' opinion on four types of flood safety measures, namely (a) removal of trees, (b) side channel creation (c) dike relocations and (d) dike reinforcements.

The first two measures are connected to the 'cyclic rejuvenation' concept that supports the renaturalization of regulated rivers. Under this idea, natural forest development in floodplains is accepted, but at a certain point water managers try to mimic the capacity of natural rivers to uproot and drag along trees to create more discharge space (Peters et al. 2006). In contrast to naturalization projects in the US, where the removal of riprap allows natural processes such as bank erosion, channel migration and large wooden debris, to occur (Kimball and Kondolf 2002), the Dutch side channels and tree removals are completely controlled and carried out by humans. Despite the large scale human control, cyclic rejuvenation as a management concept is one of the most natural options for Dutch floodplains. It allows natural forest to grow instead of the open short-cut grasslands, without a decrease in flood safety or the risk of free-floating trees, which jeopardizes shipping.

The study was carried out in Weurt, Beuningen and Ewijk, three villages in the east of the Netherlands located next to the Beuningen floodplain. This strip of land along the river Waal is 8 kilometers long and contains a mixture of small-scale meadows and 'new nature', mainly softwood forest that has grown on former agricultural land since the early 1990s. Since this woody vegetation reduces the discharge capacity of the Waal, an expert group consisting of water engineers and nature managers has developed different river measures to compensate this effect – see under 'measures' in the preceding section, these designs were taken up in our study.

The first part of the study consisted of twelve 60 to 90-minute semi-structured interviews taken by the first author among inhabitants of Beuningen and leisure seekers of the Beuningen floodplain. In general these two groups overlap since a large majority of the leisure seekers live in Beuningen. The selection of the respondents was based upon the distance between their houses and the floodplain. Two respondents lived in the floodplain itself, two along the dike, two lived between the dike and the village, five respondents in the village itself and one in Nijmegen, a nearby city. Sex, educational level and age were equally represented among the respondents. The first four respondents were selected randomly. They mentioned other potential interviewees, which made interviewing along a social network possible.

The interviews consisted of three parts, focusing on respectively the human/nature relationship, the other river related issues and the Room for River measures. During the first part, the interviewer scrutinized what the respondents regarded to be nature. She then explained the four images of the human/nature relationship, starting with the Master and ending with the Participant. After each image, the interviewer first asked the respondents' opinion on the image as a whole, followed by probes on specific elements,

like 'humans are above nature' or 'humans are responsible for nature'. In the second part, the discussion moved to river attachment, river experiences (importance of the river) and flood safety perception. During the last part, the interviewer talked about the necessity of preparing for increased peak discharges, followed by three solutions designed by the expert group. The respondents could choose which solution they thought was best and which they perceived as the most natural. The interviews were recorded on tape, transcribed verbatim and entered into Kwalitan, a software package that supports the analysis of unstructured texts. Since only 12 inhabitants were interviewed, the results do not form the basis for the conclusion. They function as a completion to the survey results by illustrating the way the respondents tend to reason.
The second part of the study consisted of the survey, which was partly based on an analysis of the interviews. The questionnaire was sent out to 1000 people, randomly selected from the birth registers of the three villages. With a return of 423 questionnaires, the response rate was very high. The composition of the sample was representative for the Beuningen population in terms of sex and education although it had slightly less lower educated people. The sample was less representative concerning the age of the respondents. In the sample only 33.8% were below 40, while the population consists of 51.8 % young adults. Therefore this group was weighed with a factor 1.5 (51.8/33.8). This same technique was applied to the age group from 45 to 65 years old that was overrepresented in the sample with 52.2% instead of 38.4%.
The questionnaire also consisted of three parts, covering the same themes as the interviews. To measure the human/nature relationship, the HaN-scale of Van den Born (2006) was updated. Three items were deleted because they were considered not to represent the images very well. Thirteen new items were added, based upon Van den Born (De Groot and Van den Born 2007; Van den Born 2008) and the analysis of the preceding interviews. Three of those items concentrated on the intrinsic versus the instrumental values of nature. Two focused on emotional or spiritual Participation in nature. The remaining items were derived from statements often heard during the interviews, such as *"Because I can think, I am more important than nature"* or *"It is because we treat nature badly that there are more and more disasters"*. Since nature is not defined in the HaN-scale, two 5-point scales measured the 'wildness wish'; the degree to which respondents want nature to be wild and spontaneous. These two characteristics were selected based upon the interview result that especially the natural origin and cultivation versus wildness are important criteria to call something nature.
The second part of the questionnaire included the variable groups 'importance of the river' and 'safety perception'. Importance of the river included the three 'sense of place' variables of Jorgensen and Stedman (2001) and variables on knowledge of the river, willingness to resist if the floodplain would be threatened and the riverside as a place to relax. Two items captured the flood safety perception.
The final part of the questionnaire contained the Room for River measures.
The interviews made clear that the respondents are very capable of understanding the different options but encountered difficulties in visioning the impact on the landscape. Therefore the questionnaire showed an aerial photo of the present floodplain, followed by three altered aerial images of the floodplain to visualize each of the Room for River

measures (removal of trees, creation of side channels and dike relocation). Two photos were added comparing the present dike with a reinforced version of the same dike, as seen from a position next to it. After each altered photo the respondents evaluated the depicted measure on three five point scales, one running from very unnatural to very natural, one from very ugly to very beautiful and one from very unsafe to very safe. Finally, the short demographic questions like sex and age were asked at the beginning and the long and ideological questions were placed at the end. [23]

Results

This section will first show the results on the river measures, followed by an analysis of human/nature relationships and the three independent variable groups. This description rounds up with table 3.4, which presents all variables. Then all results converge in a regression analysis that shows the influence of all variable groups on river measure perceptions.

River measures

In the interviews the respondents were reluctant to choose one of the three Room for River options to lower the water level of the Waal. They were basically opposed to any measure because they all involve human interference in an area perceived as natural. *"Everything they do is against nature"*. After some encouragement, all respondents chose the one involving the least human interference. For almost all respondents this resulted in the choice for side channels because *"it has the least influence"*, *"you don't remove anything"* and *"the rest will be preserved"*. Obviously, the respondents underestimated the involvement of humans in creating side channels, i.e. cutting down parts of the forest and the removal of sand and clay. Although mentioned by only a few respondents, the preference for side channels might be influenced by the end result; it looks natural and creates many opportunities for animals, plants and recreation. One respondent preferred cutting down trees to lower the water level. All other respondents fiercely rejected this option saying, for instance, that *"if you break something down, then you don't have development, do you? You demolish it."* Five interviewees emphasized the values and qualities of trees, such as providing oxygen or shade. *"They told us that this forest is very valuable. Then they should keep their hands off."* Note that all interviewees are already adjusted to the natural forest in the floodplain, which implies that the removal of trees is a step backwards in naturalness. In situations where cyclic rejuvenated forest replaces short cut grassland, it would be a step forward in naturalness.

The rejection of human interference also becomes clear from the survey. All measures show low average scores of acceptance, especially on the criteria of naturalness and beauty; see Table 3.1. The Table also supports the interview findings in the preference for side channels. This is the only Room for River measure that is considered more natural and beautiful than traditional dike reinforcement. Again in line with the interviews, the removal of trees was evaluated extremely negative with a mean score of -1.35 on 'naturalness' and -1.36 on 'beauty'.

[23] For a digital version of the questionnaire please see: ftp://ftp.science.ru.nl/pub/ucm/Mirjam/questionnairebeuningen.pdf).

Table 3.1 *Opinions on four river measures*

Naturalness of measures		Mean	Beauty of measures		Mean	Beauty of measures		Mean
1	Side channel	0.37	1	Side channel	0.40	1	Dike reinforcement	1.00
2	Dike reinforcement	-0.12	2	Dike reinforcement	-0.10	2	Dike relocation	0.55
3	Dike relocation	-0.30	3	Dike relocation	-0.28	3	Side channel	0.31
4	Cut down trees	-1.35	4	Cut down trees	-1.36	4	Cut down trees	-0.18

The first row depicts the mean of all respondent scores based upon a five point scale running from -2 for very unnatural to +2 for very natural. This scale followed after each altered photo of a measure and the statement: "I consider the landscape after this measure:...". The mean scores of beauty and safety were collected using the same method. In the table the measures are ranked by their mean score.

A different ranking appears on the safety criterion. Traditional dike reinforcement is valued positively, followed by the Room for River measures of dike relocation and side channels.
For each measure, the scores on naturalness, beauty and safety can be combined into a composite mean score. These scores are not very reliable due to the deviating scores on safety in comparison to beauty and the naturalness. This is especially the case with dike reinforcement, with a Cronbach's alpha of 0.57. Since safety is an important aspect in the evaluation of river measurements, it was decided to accept this low reliability and include the safety scores. Both side channels and dike reinforcement have a positive composite mean score (see table 3.4).

Human-nature relationships

In the variable group of human/nature relationships, all interviewees first explained their image of nature, primarily using words like 'spontaneity', 'untouched' and 'pristine'. Generally, the outcome supports previous studies that conclude that the Dutch have a broad image of nature which also includes rather cultivated areas (Buijs and Volker 1997; De Groot and Van den Born 2003; Van den Born 2008).
Concerning the appropriate human/nature relationship, the respondents fiercely rejected the first image, *Mastery* over nature. Ten respondents did not consider humans to be above nature, because nature is stronger and greater than humans.
"In the end I think nature is more powerful than humans can ever be. In the end humans lose out if there are natural disasters". Two respondents even consider humans to be subordinate to nature for this reason. For three other respondents, the problem of the Mastery image is not that humans are on top. Rather, they think humans can be above nature as long as they treat nature well. The lack of moral restraint is their reason to reject the Mastery image.
In general, the interview respondents were more positive about the *Stewardship* image.

This is primarily due to the restraints on the interference with nature and the human responsibility for it. Three respondents selected the Steward as most in accordance to their ideas, due to the responsibility and because the image includes God. Like most other respondents, however, these three disagreed with the hierarchical position of humans in the Stewardship image. They all positioned humans somewhere else (under, alongside with or as part of nature).
Concerning the image of *Partnership* with nature, a large majority of the interview respondents agreed with the basic equality of humans and nature. Many are also attracted by the idea that humans should help nature, just like nature helps people. *"We have to adapt to one another."* At the same time many respondents raise practical objections, for instance; how can we help nature and how do we know what nature wants? *"When we declare an area as a nature reserve, then that is a human goal, because we want to enjoy it. Without being aware of it, we again focus on our own needs."* Despite the positive reactions, in the end only four respondents mostly adhere to the Partnership idea. This is primarily due to the popularity of the following image, the Participant.
Five respondents thought the *Participant in nature* image was most in accordance with their world view. For them, the most decisive characteristic of this view is the fact that humans are part of nature. *"I think nature is the boss, humans are a part of it"*. Some respondents combine this with a feeling of being connected to nature, expressed by statements like *"if you have so much space around you [as in the place where I live], you feel more connected to nature. But I can also imagine that people who live in high-rise blocks do not have this feeling"*. Most respondents do not share this feeling, however, and regard 'being part of nature' as a merely biological relationship, sometimes adding that (spiritual) connectedness is something long lost: *"I think that this primal instinct of humans, at least in Western countries, is gone. (...) I believe that humans are searching to be closer to nature and the earth, but that it is gone. Humanity did this to itself"*.
The difference between the merely biological, 'food chain' interpretation and the spiritual interpretation of 'being part of nature' that came up in the interviews has had a methodological consequence. The items in the questionnaire were rephrased so that the ones representing the *Participation in nature* image focused more on (spiritual) connectedness and the image as a whole stands for a truly 'ecocentric' people-nature relationship.

The results of the survey were entered into a two-tiered analysis. The first step was a rotated factor analysis (Varimax with Kaiser normalization) that indicates to which items respondents tend to give the same answers. These grouped items (called 'factors') represent coherent concepts in the minds of the respondents. The factors may turn out to be the same as the original classification used by the researchers (e.g. the four images of relationship), but they can also be different. In the results of the present data, the factor analysis in four factors was selected, due to the use of four images of relationship in the original classification, the indication of the scree plot at this point, and because it had the highest explanation of variance (33.7%). The factor loadings of .350 and above were selected to fall into a factor. Table 3.2 gives an overview, with a literal transcription of the items as worded in the questionnaire.

Table 3.2 *Factor analysis of HaN-scale*

Master over nature	Factor loading 1	Factor loading 2	Factor loading 3	Factor loading 4	Level of adherence	Standard deviation
M Human beings have the right to alter nature radically	-0.104	-0.358	**0.345**		-0.70	1.08
M Nature cannot be allowed to stand in the way of economic progress		-0.104	**0.452**		-0.31	1.08
M Because I can think, I am more important than nature	-0.106	-0.136	**0.691**		-0.79	1.06
M We have to do all we can to control nature	0.110		**0.406**		0.10	1.20
Instru If an animal species is not of any use to us human beings, it does not matter if it becomes extinct	-0.168	-0.140	**0.365**	-0.132	-1.49	0.88
Instru Only rivers that contribute to transport, agriculture or industry are important	-0.191		**0.441**		-1.16	1.05
Intrin Natural sites are important, even if they are not useful to us human beings	0.388	0.167	**-0.388**	0.155	1.41	0.73
Factor score:					**-0.81**	**0.60**
Guardian of nature						
St It is because we treat nature poorly that there are more and more disasters	**0.456**	0.230		0.195	0.95	1.03
St We human beings have an obligation to protect nature	**0.581**	0.214		0.167	1.48	0.70
Pr We must not set ourselves above nature, but must work together with it	**0.492**	0.173		0.277	1.44	0.70
Pr Nature wants to grow, prosper and develop, just like humans do	**0.356**	0.453		0.111	0.94	0.91
Pr I would like to have a relationship with nature just like I have with my friends	**0.431**	0.487		0.134	0.90	0.91
St Human beings have a responsibility to conserve the natural environment	**0.692**	0.180			1.53	0.62
St We must treat the natural environment with great care	**0.727**	0.198	-0.133		1.48	0.66
St We have to ensure that we leave enough nature intact for future generations	**0.532**				1.69	0.60
Pt Human beings are part of nature	**0.418**	0.134		0.217	1.30	0.75
Intrin Natural sites are important, even if they are not useful to us human beings	**0.388**	0.167	-0.388	0.155	1.41	0.74
Factor score:					**1.31**	**0.48**

Companionship with nature	Factor loading 1	Factor loading 2	Factor loading 3	Factor loading 4	Level of adherence	Standard deviation
Pr I would like to spend a month entirely alone in the forest, in order to feel one with nature	0.153	**0.697**		0.123	-0.27	1.24
Pr I would like to have a relationship with nature just like I have with my friends	0.431	**0.487**		0.134	0.90	0.91
Pr It would be wonderful to join the geese on their yearly journey	0.218	**0.528**		0.271	0.71	1.15
Pr Nature wants to grow, prosper and develop, just like humans do	0.356	**0.453**		0.111	0.94	0.91
Pt Human beings have distanced themselves too far from nature by their way of thinking	0.239	**0.451**	-0.130	0.234	0.83	0.94
Pt Nature evokes spiritual experiences in me		**0.536**	-0.103	0.256	-0.21	1.23
M Human beings have the right to alter nature radically	-0.104	**-0.358**	0.345		-0.70	1.09
Factor score:					**0.52**	**0.72**
Participant in nature						
Pt When I am surrounded by nature I experience something greater than mankind	0.156	0.190	-0.194	**0.562**	0.99	0.95
Pt Nature enables me to experience the insignificance of human beings	0.258	0.190		**0.726**	1.11	0.87
Pt Nature is important to who I am	0.325	0.308		**0.390**	0.93	0.90
Factor score:					**1.00**	**0.73**
Excluded from the factors:						
Human beings are subordinate to nature	0.123	0.217		0.278	0.24	1.06
Pr People and nature are of equal value	0.181	0.137			0.45	1.02
M Technological progress will enable us to solve environmental problems in the future			0.127		0.40	0.92

All items are literal representations of the questionnaire items. The level of adherence is the mean of all respondent scores, which ranged from -2 for 'strongly disagree' to 2 for 'strongly agree'. The abbreviations of the items refer to the original images of relationship: M= Master, St =Steward, Pr= Partner, Pt= Participant and to intrinsic (intrin) and instrumental (instru) value.

Ordered from the most anthropocentric image to the most ecocentric image, the factor analysis result starts out with a very clear representation of a *Master over nature*, which consists of all original Mastery items. The two instrumental value items and a negative factor loading on intrinsic value also underline the anthropocentrism of this factor. The second factor is very large and reliable. It consists of all five original Stewardship items, combined with three Partner items that stress an active involvement in nature, an original Participant item on being part of nature and an item on intrinsic value.

Although this combination does not fully coincide with the original Stewardship view, it confirms previous findings that have shown that lay people recognize an active mode of Stewardship which combines care for nature and being part of nature. In order to distinguish it from Van den Born's original Steward (2006), it was labelled *Guardianship of nature.*

The third factor is also rather reliable, but more difficult to position with respect to the original classification. It combines especially the more romantic Partner and Participant items, with a Participant item on spiritual experiences in nature and a clear rejection of the Master. The factor lacks items on the position of humans with respect to nature ('above', 'equal' or 'part of'), which makes it even more difficult to situate it into one of the four original images of relationship. Nevertheless, the factor clearly represents a romantic ideal to live in harmony with nature and to enjoy it through intense experiences. Apparently, the respondents also interpret spiritual experiences as part of this togetherness with the earth. We decided to call this image *Companionship with nature.*

Finally, the *Participant in nature* includes original Participant items that refer to experiences in nature that are less earth-oriented than in the Companionship factor, and rather refer to the experience of the all-pervading greatness of nature that forms human identity and gives meaning to human lives. The Participant lies close to the first formulation of this image by Zweers (1995) and De Groot (De Groot 1992) and to what is often called 'deep ecology' in the US (e.g. Fox 1995).

In Table 3.2, the four images resulting from the factor analysis are ordered according to the degree of ecocentricity. The last two, Companionship with nature and Participation, both have the same level of ecocentrism. These two images would appear to be the empirical confirmation of the existence of two parallel modes of ecocentricity, as has been analyzed philosophically by Cheney (1989) and Warren and Cheney (1991).

Table 3.2 also shows the composite mean scores (levels of adherence) of the images. One major result here is that the scores confirm previous findings on the HaN scale as well as the interviews in Beuningen, with the Mastery over nature image being almost universally rejected. Guardianship of nature is a massive mainstream, while both Participation in nature and Companionship with nature have positive mean levels of adherence. The general public's own 'folk philosophy' is much more ecocentric than philosophers (and policymakers) believe.

Concerning the definition of nature, the level of adherence on 'wildness wish' is rather high, which means that nature is regarded as something wild that grows spontaneously.

Importance of the river

In particular the interviewees who lived near the floodplain visited it almost daily and claimed to feel a bond with the area. *"I think it is always beautiful, as if it is there especially for you."* Among the respondents who lived further away, only those who visited the floodplain regularly said they felt attached to it. The respondents' main recreational activities were walking and cycling. Most respondents went to the river to relax and to get away from their daily worries.

Table 3.3 shows the factor analysis result of all 'importance of the river' items of the survey questionnaire. This single factor has high factor loadings and explains 35% of the variance.
A factor analysis with two factors was rejected due to very low factor loadings on the second factor. The mean score of the whole factor (0.45 on the scale between -2 and +2)) shows that the river is important to the respondents, especially when taking into account that most respondents live in the village, a few kilometers away from the floodplain.

Table 3.3 *Factor analysis of 'Importance of the river'*

Importance of the river items	Factor loading	Level of adherence	Standard deviation
The river Waal does not mean much to me	-0.726	-0.76	1.12
I miss the river Waal when do not go there for a while	0.819	0.23	1.16
The things I do along the river, I could just as well do somewhere else	-0.448	-0.49	1.12
I will resist if the floodplain is threatened	0.571	0.57	1.11
I know a lot about the river Waal and the floodplains	0.413	-0.24	1.10
I go to the river Waal to get out of the daily grind, to escape from my daily activities. At the riverside I can relax and recover.	0.457	0.99	1.11
Factor score:		**0.45**	**0.77**

The table shows the literal representation of all 'Importance of the river' items as included in the questionnaire. The level of adherence is the mean of all respondent scores, which ranged from -2 for 'strongly disagree' to 2 for 'strongly agree'. The two variables with a negative factor loading have been inverted to calculate the factor score that represents the composed variable of 'Importance of the river'.

Safety perception

All respondents feel safe where they live. Floods are not part of their daily lives; they have never experienced one, it almost never happens and some even find it difficult to imagine it might happen one day. A few respondents remarked that they feel safer because the dikes have recently been reinforced. Table 3.4 shows a positive mean on the safety variables in the survey. Yet the mean is lower than expected based upon the responses in the interviews and past studies in the Netherlands.

Table 3.4 *Descriptive Statistics of All Variables*

Variable Number	Variable group	Variable	Mean	Standard Deviation	Cronbach's Alpha
Dependent Variables					
1	opinions of measures	side channels	0.36	0.93	0.70
2		dike reinforcement	0.27	0.88	0.57
3		dike relocation	-0.02	0.85	0.70
4		cut-down trees	-0.97	0.73	0.72
Independent Variables					
1	Visions of Nature	Mastery	-0.81	0.60	0.66
2		Guardianship	1.31	0.48	0.83
3		Companionship	0.52	0.72	0.77
4		Participation	1.00	0.73	0.67
5		wildness wish	0.81	0.77	
6	importance of river score		0.45	0.77	0.73
7	safety perception score		0.29	1.03	0.52
	background variables:				
8	political issues	economic growth	0.42	0.96	
		crime	1.38	0.86	
		river flood protection	0.84	0.85	
		social security	1.02	0.83	
		unemployment	1.08	0.82	
		education	1.20	0.82	
		nature conservation	0.97	0.86	
		health care	1.36	0.81	

Number	Variable group	Variable	Distribution Percent
9	sex	man	52
		woman	48
10	age	40 years and below	25
		41 to 50 years	27
		51 to 60 years	28
		61 years and older	20
11	education	primary education	5
		lower secondary education	27
		higher secondary education	38
		college or university	30
12	frequency river visits	daily visits	5
		weekly visits	37
		monthly visits	40
		yearly or never	18

Variable Number	Variable group	Variable	Distribution Percent
13	proximity	within 1 km	9
		between 1 and 1.5 km	20
		between 1.5 and 2 km	34
		2 km and further	37
14	duration living near river	0–5 years	10
		6–15 years	20
		16–25 years	32
		26–35 years	17
		36 years and longer	20
15	religion	religious	23
		slightly religious	39
		not religious	38
16	political party[a]	CDA	22
		PvdA	28
		VVD	17
		LPF	1
		SP	15
		GL	8
		miscellaneous	7

The table shows all variables that will be entered in the regression analysis. The dependent variables present the opinions on three "Room for River" measures (side channels, dike relocation, and cut-down trees) and the traditional measure of dike reinforcement. Each dependent variable averages three scales on which the respondents indicated how they evaluate the landscape after the measure has taken place. The five-point scales were run as (1) very ugly to very beautiful, (2) very unnatural to very natural, and (3) very unsafe to very safe. The first seven independent variables of the table are also composed. The four visions of human-nature relationships are the factor scores as depicted in Table 3.2. "Wildness wish" averages the scores on two five-point scales; one running from wild to cultivated and one from planned to naturally grown. These scales followed the phrase "I consider something to be nature if it is…."
The "importance of the river" variable is the factor score of the single factor as depicted in Table 3.3. The "safety perception" variable combines the scores on the following two variables: "I do not feel threatened by floods in general" and "I do not feel threatened by floods in the place I live." Concerning the background variables, the questionnaire had similar answer categories as presented in the table except for "proximity" and "duration," which were open-ended questions. The two political questions were formulated as follows: "Do you want to indicate the importance of the following political issues?" and "If there will be elections tomorrow, for which party would you then vote?"

Background variables

Table 3.4 presents the distribution of the background variables, including factual characteristics like education or sex and more ideological variables like religion and the importance of certain political issues. Many of these characteristics correlate with the human/nature relationships. Table 3.5 shows that the most easily observable characteristics, sex and age, show that males and older respondents adhere relatively more to Mastery over nature. Respondents in their fifties adhere more to the Participant than other age groups. Among the ideological variables especially the importance of nature conservation and voting Green Left have predictive power. Note that also the variable group of 'importance of the river' and 'wildness wish' have many significant correlations with the human/nature relationships.

Table 3.5 *Four Multiple Regressions, Visions of human/nature relationships as dependent variables*

Independent Variables		Dependent Variables			
Variable Group	**Interval Variables**	**Master beta**	**Guardian beta**	**Companion beta**	**Participant beta**
Sex	male	0.15	-	-	-
Age	50–60 years old	-	-	-	0.29
	+60 years old	0.32*	-	-	-
Education	higher secondary education	-	-	-	-0.32
	college or university	-	-	-	-0.40
Frequency river visits	monthly visits	-0.17	-	-	-
Proximity	between 1 and 1.5 km	0.17	0.20	-	-
	between 1.5 and 2 km	-	0.20	-	-
	2 km and farther	-0.21	0.31*	0.30	-
Religion	religious	0.17	-	-	-
Variable Group	Dummy Variables	Master B	Guardian B	Companion B	Participant B
Political issues	economic growth	0.10	-	-	-
	river flood protection	0.13	-	-	-
	social security	-	0.26*	-	-
	nature conservation	-0.27*	0.19	0.33*	-
Political party	Green Left	-0.30*	-	-	0.41*
Importance of the river		-	0.18*	0.26*	0.31*
Safety perception		-	-0.12	-	-
Wildness wish		-0.18*	0.22*	0.15*	-
R^2		0.37	0.34	0.41	0.36

This table shows the explanatory and predictive power of the background variables, *'Importance of the river'* and *'Safety perception'* on the four Visions of human/nature relationships. The table only shows the variables that have one or more correlation(s) that is significant ($p<.05$). A * indicates a correlation of $p<.01$. Since the predictive power of the dummy variables cannot be derived from the standardized coefficients (beta), the table presents the unstandardized coefficients (B) for the dummy variables. Betas are used for the interval variables as to make a comparison between the predictive powers possible.

The regression analysis

All variables were joined in a multiple regression analysis to test the model discussed in the Introduction. This analysis shows the influence of all four variable groups on the four river management measures separately.

Table 3.6 *Four Multiple Regressions, Flood Protection Measures as Dependent Variables*

Variable Number	Independent Variables		Dependent Variables			
	Variable Group	Interval Variables	Cut Down Trees beta	Dike Relocation beta	Side Channels beta	Dike Reinforcement beta
1	Visions of Nature	Mastery	-0.04	0.11	-0.02	-0.01
2		Guardianship	-0.28**	-0.02	-0.09	-0.04
3		Companionship	0.10	0.01	-0.09	-0.03
4		Participation	-0.11	0.00	-0.02	-0.06
5		wildness wish	-0.17**	-0.02	-0.16*	-0.08
6	importance of river score		-0.18**	-0.10*	0.16*	-0.13
7	safety perception score		0.02	-0.07	-0.08	-0.01
	background variables:					
8	political issues	economic growth	-0.10	-0.05	0.05	-0.05
		crime	0.16*	0.06	0.01	-0.05
		river flood protection	0.05	0.18**	-0.08	0.10
		social security	0.02	0.01	0.05	0.15
		unemployment	0.05	-0.05	-0.18	-0.18
		education	-0.13	0.09	0.22*	0.00
		nature conservation	0.01	-0.04	0.03	0.10
		health care	0.01	-0.12	-0.10	0.01
Variable Number	Variable Group	Dummy Variables	Cut Down Trees B	Dike Relocation B	Side Channels B	Dike Reinforcement B
9		sex	0.18*	-0.02	0.05	-0.13
10	age	41–50 years	0.05	-0.20	0.40*	-0.03
		51–60 years	-0.06	-0.33*	0.48**	-0.08
		61 years and older	0.51**	-0.18	0.68**	0.11

Variable Number	Variable Group	Dummy Variables	Cut Down Trees B	Dike Relocation B	Side Channels B	Dike Reinforcement B
11	education	lower secondary education	0.13	0.01	0.47	0.14
		higher secondary education	0.20	-0.01	0.36	0.14
		college/university	0.28	0.36	0.40	0.14
12	frequency river visits	daily visits	0.05	0.10	0.05	0.31
		weekly visits	0.06	0.02	-0.30	0.08
		monthly visits	0.05	0.15	-0.08	0.18
13	proximity	between 1 and 1.5 km	-0.01	0.32	0.24	0.12
		between 1.5 and 2 km	0.05	0.30	0.19	0.13
		2 km and farther	0.08	0.28	0.30	0.19
14	duration living near river	16–25 years	0.05	-0.26	0.07	-0.04
		26–35 years	0.17	0.13	-0.03	-0.07
		36 years and longer	0.03	-0.19	-0.36	-0.08
15	religion	religious	-0.25	-0.07	-0.31	-0.13
		Slightly religious	-0.13	-0.09	-0.19	-0.04
16	political party[a]	CDA	-0.10	-0.04	-0.01	0.20
		PvdA	0.03	0.03	-0.13	0.08
		VVD	-0.13	0.20	0.36	-0.58
		LPF	-0.18	-0.16	-0.24	-0.13
		SP	-0.21	1.04	-0.02	-0.05
	R^2		0.34	0.20	0.20	0.12

*Table 3.6: Four multiple regressions, flood protection measures as dependent variables. The table shows the explanatory and predictive power of the four variable groups (Visions of Nature, Importance of the river, Safety perception and background variables on the opinion on four flood protection approaches. The significant relations are indicated with * for p<.05 and ** for p<.01. The standardized coefficients (beta) show the relative predictive power of the interval variables and the unstandardized coefficients (B) represent the power of the dummy variables.*

The regression analyses of table 3.6 show that all independent variables together explain 34% of the variance of the respondents' opinion on cutting trees, which is considered reasonable. The other measures have lower explained variance (R2) with only 12% for dike reinforcement.

Looking at the predictive power (B or beta), cutting down trees has the most significant predictive variables. Concerning the Visions of Nature, the regression analysis shows that Guardianship has a large and significant negative effect on the opinion on cutting down trees. Clearly the respondents do not recognize this as a Room for River management style that tries to mimic natural processes in order to care for it.

The 'wildness wish' also negatively correlates with cutting trees, meaning that all things equal, respondents with a relatively wild and spontaneous image of nature are more opposed to cutting trees. Of the other variable groups 'importance of the river' shows a negative predictive power. The background variables of sex and age are significant; men

[a] Political party abbreviations are CDA, Christian Democrats; PvdA, Labor; VVD, Liberals; LPF, Pim Fortuyn; SP, Socialist Party; and GL, Green Left.

and older respondents (above 61 years) were relatively less opposed to cutting trees when compared to women and younger generations.
When looking at dike relocation, we see that the Visions of Nature do not show significant correlations. The 'importance of the river' variable has a negative effect, just like the background variable of older age (51 to 60 years). The background variable that represents the importance of 'river flood protection' correlated positively, meaning that the respondents who think of flood protection as a relatively important issue are more supportive of dike relocation, supposing that all else is equal. The third Room for River measure, side channels, is negatively predicted by the 'wildness wish' and positively by 'importance of the river', 'age' and 'education as an important political issue'. Finally, dike reinforcement has no predicting variable in this analysis.
Overall, the variables of 'age', 'wildness wish' and 'importance of the river' have the strongest predictive power. All else equal, older people evaluate cutting trees and side channels more positive and the more respondents believe nature to be wild and spontaneous the more they oppose these measures. Both measures differ from the dike adaptations in the sense that they represent relatively large-scale interventions in a natural area. Obviously, this is not in line with the idea of nature as something wild that grows spontaneously. Apparently, older respondents have fewer difficulties with this.
The acknowledgement of the river's importance predicts a negative stance on cutting trees and dike relocation and positive opinion on side channels. Finally, despite the major role safety and Partnership with nature play in Dutch river management, both variables do not have an effect on any of the measurements.

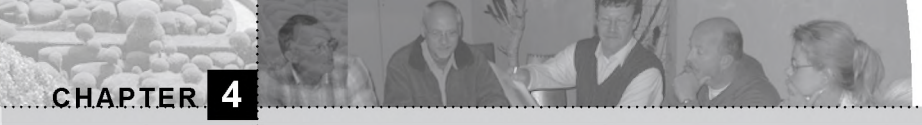
Discussion

The general rejection of the image of Mastery over nature and the adherences to the images of Guardianship of nature and Participation in nature (Table 3.3) show that the citizens of Beuningen embrace an ecocentric rather than anthropocentric vision of the relationship between people and nature. This represents a general trend among the Dutch public (Van den Born 2006). Seemingly parallel to this, Dutch river policies have moved from a Mastery over nature attitude (working against nature) to a more ecocentric, Partnership-like paradigm (working with nature). The rivers are given more space and peak discharges are drained in a more natural manner than between ever-higher dikes. Yet, the enthusiasm of the Dutch policymakers and engineers for 'Room for River' floodplain management does not appear to be shared by the riverside residents. In both the interviews and the survey in the Beuningen area, the two room-for-river measures of dike relocation and trees removal received negative responses. The third room-for-river measure, the creation of side channels, was evaluated only slightly positive, but so was the traditional measure of dike reinforcement. How may this be explained?
Overall, the results of the multiple regression analysis are not strong enough to allow straightforward conclusions. Two hypotheses may be formulated on the basis of the data however, both of which are interesting enough.

The first hypothesis is that people at heart agree to the new river management paradigm, but do not perceive the naturalness of the discussed measures. Table 3.1, for instance, indicates that people see the removal of floodplain trees as highly unnatural. They do not take into account, obviously, that carrying away trees that block the flow is the very thing a natural rivers does. More support of this hypothesis is found in the regression analysis (Table 6), showing that the more people adhere to the idea that nature should be wild and spontaneous, the stronger they oppose all measures. The same is found for the importance of the river factor, which may act as a multiplier of this negative response.

The second hypothesis is that the respondents may have more fundamental objections against the Room-for-River paradigm as such. Engineers may have moved in an ecocentric direction, but perhaps their type of ecocentricity does not match that of the respondents. The engineers are moving towards Partnership with nature ('working with nature', or Companionship with nature as Table 3.2 puts it). This ideography is partly recognized by the public as the factor analysis has shown and not strongly adhered to; Guardianship of nature and Participation in nature are the two much more predominant types. Like the previous hypothesis, this hypothesis is also supported by the regression analysis. Table 3.6 shows that strong adherence to Guardianship results in more negative scores for the overall measures. Importance of the river may again act as a multiplier here.

The two hypotheses suggest different policy actions to address the gap between the river managers' view on floodplain planning and that of the general public. The first hypothesis leads primarily to improved communication, especially a more intense debate on the long-term and large-scale naturalness of Room for River measures versus the directly visible and small-scale impact. The second hypothesis leads to an adaptation of floodplain planning, especially by taking more care to use subtle measures and avoid a large-scale overhaul of the ecosystem. Further research may be designed to adjudicate between these two hypotheses. For the time being, it would seem wise to assume that both hypotheses are true to a sufficient extent and to design communication strategies and floodplain management plans accordingly.



Visioning with the public

Incorporating public values in landscape planning

CHAPTER 4

Visioning with the public

Incorporating public values in landscape planning

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This article focuses on the incorporation of values in visioning, an early stage of landscape planning. After an introduction of visioning, in which attention is given to the importance of expert knowledge and public values, two visioning cases are evaluated. The authors assess methods of making public values manifest and ways to include them in the visioning process. The cases show that surveys, semi-structured interviews and the emphasis on values during the visioning exercise itself were very suitable methods to acquaint civilians with both their own values and those of others. The explicit values made communication more effective and enhanced mutual learning. In both cases the civilians proved to be very capable of expressing their values and visioning in conjunction with experts.

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Introduction

More and more, civilians find that it is their 'right' to be involved in planning processes. This societal pressure has been felt increasingly by policy makers and administrators and expressed in numerous experiences with public Participation. In literature it is commonly accepted that the involvement of public actors is important in planning processes (Healey 1997; Innes and Booher 2003). Public Participation in its broadest sense refers to the inclusion of people who have a stake in a decision-making process (Mitchell 2002). As a participatory method in which delegated power to civilians is point of departure, visioning is common practice in countries like the USA and Canada (Shipley 2000). As a result, many processes have moved beyond public consultation rounds into joint planning from the first phases onwards. Parallel with this a large body of knowledge on public Participation, visioning and local knowledge came into existence. However, up to today there seems to be little attention paid to public values in landscape planning. This is an important deficit since many decisions are largely based upon normative claims. A possible explanation for the absence of public values in planning is that values are more deeply hidden than factual knowledge and thus more difficult to elicit. One way to deal with this difficulty is to learn from experiences with value elicitation from the field of environmental values. Unfortunately, the studies in this field do not link the results to practical cases of visioning or other phases of landscape planning.

This article explores the way public values can be elicited and incorporated in visioning as a planning method, and how visioning can be effectively organized including both experts and civilians. After a review of literature on visioning, a close look will be taken at the status of expert knowledge and what can be understood by public values.

Two cases then supply an illustration of the way in which public values can be incorporated in the planning process. This study is empirically driven in the sense that the case studies are taken as point of departure to discover the problems and challenges involved in a visioning process that includes both experts and civilians.

Visioning

Visioning is a process in which participants build consensus on a description of the group's desired future and is based on actions to help making that future a reality (Moore et al. 1999). An important aspect of visioning is the way a vision has been established. If a vision is shared, many people will be committed to it (Senge 1994). As part of a planning process, visioning is supposed to be inclusive, collaborative and consensus-based (McCann 2001). Visioning can be considered as one of the early steps in a participatory planning process that make use of the 'co-think capacity' of stakeholders. It can also offer the opportunity to 'imagineer' futures for places in ways that facilitate innovative, creative and comprehensive perspectives beyond those of traditional land-use and market-led planning (Gaffikin and Sterrett 2006). In literature, the term 'vision' has been defined in many ways (Shipley 2000; O'Brien and Meadows

2001); it generally refers to an image of a desired future state (Parikh and Neubauer 1993). A vision is not a fantasy, but rather a picture of what might be achieved within a municipality or region given an optimistic view on capacities and constraints (Myers and Kitsuse 2000).

Critics of visioning by stakeholders and involved civilians stress that it entails high costs and that expectations may be created that cannot be fulfilled (Haines 1998). Others, like Helling (1998), object that a vision does not stand for a plan capable of providing a route to realise the vision including the resources needed. Besides, scholars' critique concerns the factor of power in visioning processes. McCann (2001) and Hurley and Walker (2004) show that planning is an arena for competing visions for the future of the landscape, a struggle between different social groups regarding whose vision should guide planning in the years to come.

Literature on visioning shows that the scope of a vision varies, from small ones (like cases in specific areas we describe later), a river basin (Verhallen et al. 2001), or community and urban planning (Ames 1997; Helling 1998; McCann 2001; Margerum 2005). Such studies demonstrate that visioning used as a public Participation tool provides an effective pathway that can be followed towards a shared plan (Senge 1994; Morrison 2003). In the Netherlands, for example, visioning has been used in urban renovation projects for decades. Although in the water sector visioning is rarely used, the visioning projects like Hamlet IJsselzone Zwolle in 2001 [25] and Stadsblokken Meinerswijk in Arnhem in 2008 [26] provided for an increased acceptance of this planning method. The main difference between cases described in literature and Dutch visioning projects is that the latter have been organized principally by institutional stakeholders, e.g. governmental agencies, often in combination with or delegated to a group of committed stakeholders, e.g. private owners, real estate enterprises and experts like landscape architects or urban planners. Such initiatives usually result in a Landscape Development Plan.

In spite of the increasing number of visioning projects referred to in literature some difficulties remain. Cole (2001) mentions the gap between a vision and its realisation in practice. Wilson (1992) describes pitfalls like executive impatience, lack of flexibility, failure to implement and to build consensus. This paper primarily focuses on the difficulty of consensus building. This can be attributed to a certain degree to different interests, values and approaches of the involved stakeholders. While on the whole the interests of the participants are more or less clear, their values are more difficult to grasp. Emphasis on the elicitation of values prior to or during the visioning process is important since it improves communication among stakeholders (Aarts 1998). This increases efficiency of the debate (Jacobs et al. 2002) and contributes to mutual understanding, or even consensus, on an abstract level (Keulartz et al. 2000).

Public values

When looking at the field of public environmental values, we can distinguish between the conceptual studies carried out by philosophers and the empirical ones by social scientists. Although both types can function as a basis to structure and analyze the values in visioning, this section will primarily outline the empirical studies since these

[25] www.zwolle.nl/cms/cms.nsf/AllByUNID/BE5B65C31DCCD7BDC12572D4003392BC (19-11-2008)

[26] http://www.stadsblokken-meinerswijk.nl/index.php?id=165 (19-11-2008)

provide methods to elicit values. The number of empirical studies on environmental values increased rapidly during the last decades and so did the diversity within this field. This is mainly due to the diversity in disciplines that study these values. Psychologists, for instance, focus mainly on landscape preferences (Coeterier 1987; Van den Berg 1999) and attachment to local areas (Altman and Low 1992). Empirical philosophers put emphasis on the ethical issues concerning the relation between humans and their (natural) environment (Minteer and Manning 1999). The studies also differ in their aim, some merely have a scientific purpose carried out for methodological reasons (Burgess 1988; Satterfield 2001) or to test or develop theory (Davenport and Anderson 2005). However, a growing number of studies are also relevant for policy-making.

Most studies on public values of the environment are surveys among a large group of respondents. Questionnaires are circulated among a random selection of the general population (Buijs and Volker 1997; Dunlap et al. 2000). Others have a more local character and focus on the perception of people that live next to a nature area (Berends 2005) or an area where development has taken place or is about to take place (Buijs 2009). In the Netherlands, a great number of questionnaire surveys are related to river management, especially after the high water periods in Dutch rivers in 1993 and 1995. The Dutch Executive Agency of Water Management initiated some surveys among the general public (Langers et al. 2002), riverside residents (Snippe et al. 2003; Buijs 2009) and residents for whom flood protection measurements are about to take place (Kaashoek et al. 2003).

The advantage of surveys is that the results can be generalised to the whole population or whole local community. However, they have the disadvantage of being limited by the researcher's focus, such as when an opinion is sought on policy options. Yet again, if the survey is broader, as in research into environmental values, then the results are often too general to apply to concrete situations. Some scholars therefore decide to make use of focus groups (Keeney et al. 1990; Davies 2001) or semi-structured interviews (Davenport and Anderson 2005) in order to scrutinize the motives and values underlying the public perception of landscape developments and their preference for certain policy options.

Bogaert (2003) states that his study on environmental values among civilians and leisure seekers provides insight into the potential support for (future) policies, while Davies (Davies 2001) aims to give the silent majority a voice. Unfortunately, neither the studies mentioned in this section nor the numerous handbooks on visioning give concrete directions on how value studies can be used in visioning. In the two cases described in this paper we explore several methods to explicate values in visioning and to get more balance between the contribution of experts and civilians. We first focus on the status of expert knowledge, the methods used, and the way in which experts' and civilians' values can be incorporated in the planning process.

Status of expert knowledge

Planning processes involve many experts, including specialised civil servants, consultants, hired by the government especially for calculations and mapping, and others who are connected to stakeholders in the area. Experts not only have knowledge,

they may also represent interests of organisations involved. Jasanoff (2003) states that experts often exercise a form of delegated authority. In her view, governmental agencies and other stakeholders do not give up the right to participate in the decision-making: they only grant to experts a carefully circumscribed power to speak for them on matters requiring specialized judgement. Viewing experts in this way implies that they can be considered as agents of information and knowledge. Illustrative is the way Dutch planning processes are organized. While administrators of governmental agencies participate in a steering group to know what is going on in the project and to influence decision making, experts are involved in the project group dealing with project issues.

From literature it is known that experts used to stand on a pedestal. Wynne (1992) shows that experts abused their social status and specialized knowledge to serve both their own interests and those of elites maintaining dominance over the rest of society. Although today expert knowledge is conceived as limited in ways that need to be examined, criticised and, if necessary, corrected in the interests of democratic decision-making (Jasanoff 2003), their role is still important, especially when it comes to the selection process concerning whose and which knowledge matters. Scholars like Woodhouse and Nieusma (2001) and Liberatore and Funtowicz (2003) demonstrate that expertise is imbued with values; it is not and cannot be objective, neutral or disinterested; and uncertainty provides for constraints of expert guidance on complex public issues. Additionally, scholars worry not so much whether values are present in expert knowledge but whether some peoples' values are systematically over-represented through access to and representation by expertise, while those of others are systematically under-represented (Woodhouse and Nieusma 2001). Illustrative is the use of expert knowledge in Dutch planning processes for the problem definition, exploration of options to solve the proposed problem and selecting an alternative that fits most.
According to Hisschemöller and Hoppe (2001) planning processes appear to be more science-driven and expert-dominated because politicians and policy makers call upon expert knowledge to solve complex, sometimes highly controversial, technical and social problems. Planning practice teaches that knowledge of all participants is needed for the answer on questions concerning defining the problem, which options are feasible and how to get sufficient support for the chosen alternative. As Healey (1998) puts it:
"...experts lack sufficient knowledge about the qualities of places, problems, potential solutions and how to make policies work effectively. People who live in the area or who are involved in business have a knowledge built up through their day-to-day experience of a place. (...) This means that experts need to recognise that they have access to only one of many 'forms of knowing and valuing'."
Recent developments show that in response to apparent policy failures, the 'traditional' planning practice is giving way to integrative planning, bringing together expert knowledge and local priorities (Selman and Wragg 1999). Hence, it is important how experts relate to civilians, how the interplay of facts and values is handled, and to notice the cognitive and normative dimensions. With respect to these normative dimensions, a central question is how to maintain focus on what people really need and prevent

deliberations ending up as narrow interest negotiations (Pellizzoni 2003). Many studies (Fischer 2000; Nowotny et al. 2002; Rinaudo and Garin 2005) show that it proves to be effective to bring experts and civilians together. An important advantage is that a social learning process will take place which may open the eyes of both experts and civilians to each others' views and values, and clarify their positions. The expert-civilian interaction may turn out positive when some basic rules for interactions are set, e.g. that the setting needs to be a learning environment in which trust may grow and those concerned learn new ways of relating to each other (Healey 1998).
Based upon insights provided by these studies the current paper concentrates on the incorporation of experts' and civilians' values in a visioning process. Therefore, we will give attention to the role experts play in the process, their attitude towards civilians and to what extent experts' and civilians' values differ. Starting from empirical cases we will search for new insights based upon practical experiences in Dutch landscape planning.

Methods

Two cases in the Netherlands were selected for this study: Beuningen, a village in the East along the river Rhine, and Arnemuiden, a village in the South-West near the shore of Lake Veere. Both areas are on the outskirts of the municipality, with surface water as a leading principle in spatial planning. Concerning the visioning sessions the main similarities between the cases are: (1) the elicitation of public values; (2) the involvement of the public; and (3) the experimental status of the visioning sessions. These three topics guide the analysis of both cases.

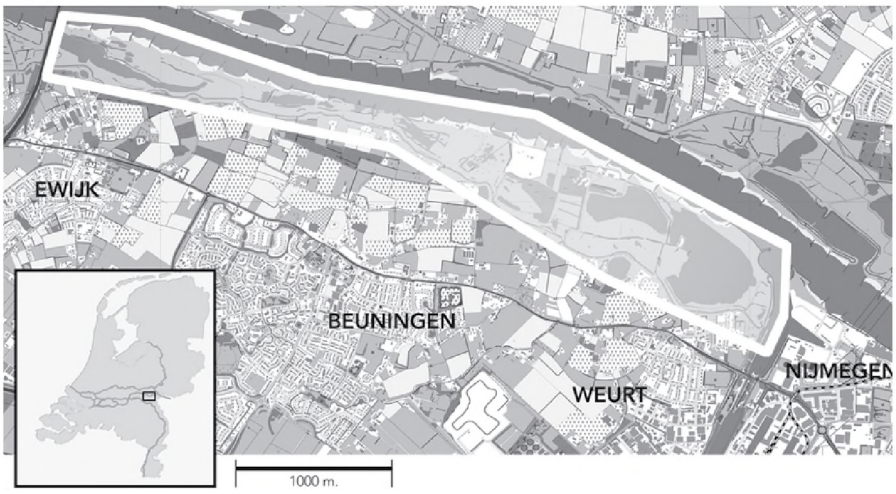
Table 4.1 *Similarities between the cases and their interpretation*

	Similarities	Case Beuningen	Case Arnemuiden
1	Values and visions	Survey among general population about Visions of Nature (N=423)	Interviews among civilians, experts, governmental parties and other stakeholders (N=60) Survey among participants of first session about values of landscape elements (N=45)
2	Public involvement	Joint sessions of 6 civilians and 7 experts	Separate sessions of 45-60 civilians and experts
3	Experimental status	Experiment outside political frames Closed process Result: brochure with information of dreaming sessions and map of dream image	Experiment of which result is part of decision making process Open process Result: planning advice for the city council

Within these broad similarities, differences show up as well, as Table 4.1 shows. Firstly, in each case different methods were used to elicit values. In Beuningen a questionnaire focusing on nature in the floodplain was distributed among the general population. In Arnemuiden, after a general round of interviews with most stakeholders, a questionnaire concerning landscape elements was circulated among the participants of the first session. Also, the method to elicit public values during the discussions was

different. While in Beuningen the focus was on the perception of the landscape as a whole, in Arnemuiden the valuation and ranking of landscape elements was pivotal. Secondly, the way the public was involved differed in both cases. In Beuningen considerably fewer civilians were involved than in Arnemuiden and during the sessions experts were allowed in. In Arnemuiden civilians and experts held separate meetings (except the initial meeting) and experts gave only written feedback and suggestions on civilians' ideas.
Finally, although both cases were designed as experiments, their political status was different. The sessions in Beuningen were organized without any direct link to decision-making, while those in Arnemuiden were planned to result in advice to the city council and were as such part of the decision-making process. Because of this, politicians were interested in the way it was organized, how it was running and what the possible outcome would be. This interest was much lower in Beuningen. The sessions in Beuningen can be considered as a closed process since it had a pre-defined group of participants and information about the sessions was not made public, while the Arnemuiden process was open to all interested parties and information about the sessions was published in the local press. The difference in political status might give some answers on relevant issues in visioning literature, e.g. the expectations of the participants and how to reach consensus. While the experimental status of the visioning process may decrease the participants' expectations, the term visioning would have been a contrary effect as some experts of the Beuningen case stated since visie in Dutch suggests the obligation to consult stakeholders. Two out of seven experts considered the term 'visioning' inapproprate. Hence, the experiment was called "dreaming sessions".
In Arnemuiden the term dreaming sessions was also used, but the municipality even feared the word 'dreaming' as it might raise false expectations. Nevertheless this was not a problem to the civilians involved and therefore the organizers stuck to the term. Therefore we will refer to the experiments as 'dreaming sessions'.

Figure 4.1 *Map of the Beuningen planning area*



Case Beuningen

The floodplain of Beuningen is a partly natural area of 250 hectare along the river Rhine, in the East of the Netherlands. The floodplain borders three villages of the municipality of Beuningen: Weurt, Beuningen and Ewijk (23.000 inhabitants). The floodplain used to be agricultural grassland, but as result of nature restoration projects in the 1990s it turned largely into forest. The Beuningen floodplain represents various interesting opportunities, e.g. the redevelopment of an old brick factory, the planning of digging side channels, and the development of recreation facilities.. The area also has some potential planning bottlenecks, such as polluted soil, a plan for a port for inland vessels and a storage site for industrial tubes.

Researchers from Radboud University Nijmegen organised four dreaming sessions in autumn 2006 [27] (see Table 4.2). Some months before the dreaming sessions took place, one thousand questionnaires were circulated among randomly selected civilians in the three villages of the municipality, of which 423 were returned (see for more information De Groot and De Groot 2009). For the dreaming sessions the researchers invited by letter all floodplain landowners, two angling clubs, a farmers' organization and 30 civilians who had specified their willingness to participate in the experiment on the questionnaire. All were invited for an information meeting on the dreaming sessions, resulting in four civilians, an angler and a farmer who were willing to participate. Seven experts were selected based upon their professional involvement in the area. [28]

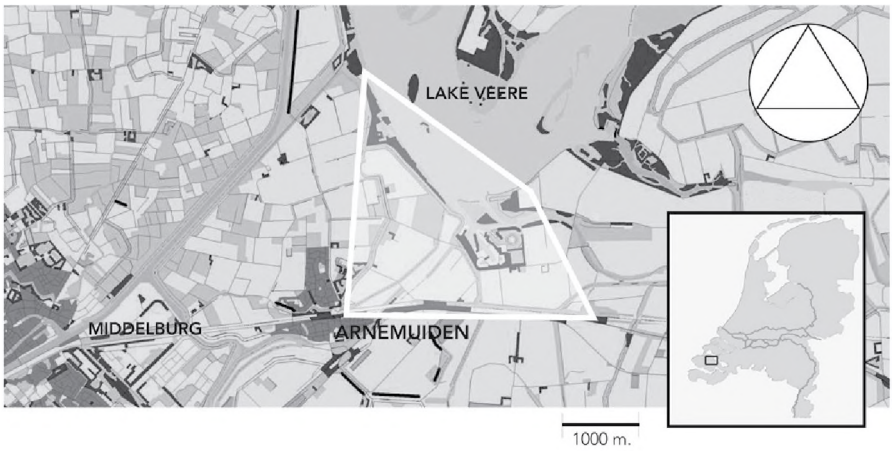
After four sessions the civilians regretted that nothing would be done with the results. Hence, one of them took the lead and arranged a meeting including most of the participating civilians and three aldermen of Beuningen. As this initiative did not result in any visible action by the municipality, the participants declined to take further steps. Half a year later, the dream was taken into an inter-municipality planning process along the river Waal initiated by the project 'Waal Wealth' (WaalWeelde). [29]

[27] The visioning experiment was initiated within the context of the European 'Freude am Fluss' project to test the first steps of a guideline for joint planning; mutual learning and shared visioning.

[28] Agency of Water Management, the municipality of Beuningen, the province of Gelderland, two nature conservation agencies, a sand and clay extraction enterprise and an environmental scientist from the Radboud University Nijmegen who designs side channels in the floodplain.

[29] Agency of Water Management, the municipality of Beuningen, the province of Gelderland, two nature conservation agencies, a sand and clay extraction enterprise and an environmental scientist from the Radboud University Nijmegen who designs side channels in the floodplain.

Figure 4.2 *Map of the Arnemuiden planning area*



Case Arnemuiden

The village of Arnemuiden is situated in the South-West of the Netherlands close to Lake Veere. Apart from recreational activities the land is mainly used for agriculture. After the village became part of the municipality of Middelburg in 1997, some plans for housing development and water related activities were launched. Since none of these plans were accepted due to strong opposition by civilians of Arnemuiden the municipality decided to adapt the planning process towards a more interactive approach in which the civilians of Arnemuiden would actively be involved.

In 2006 a consortium of Partners including Erasmus University Rotterdam [30] developed a shared recommendation for the development of the area. The consortium designed a dreaming process with separate sessions for civilians and experts. The planning activities in the past had strained the relations in the area to a point where civilians were expected not to cooperate in sessions organized with the attendance of experts. In case specialised information was required, the civilians were supported by, among others, a group of experts.

Prior to the start, the organizers held circa 60 interviews among more than 100 civilians, stakeholders, experts and other (governmental) parties. The aim of interviews included identifying the willingness of the interviewees to participate.

After the dreaming sessions were finished one of the participating civilians presented the final two scenarios to the mayor of Middelburg. It was now up to politics whether these two scenarios would be incorporated in the design of plans for the area.

[30] The consortium consisted of Zeelandprovince, the municipality of Middelburg, water board Zeeuwse Eilanden, Executive Agency for Water Management (*Rijkswaterstaat*), Government Service for Land and Water Management (*Dienst Landelijk Gebied*), Knowledge organisation Living with water (*kennisimpulsprogramma Leven met Water*), knowledge institute TNO, consulting and engineering company Tauw and Erasmus University Rotterdam.

Results

This section will first focus on the elicitation of values in both cases, i.e. the evaluation of the different methods and the incorporation of values in the visioning process. Then, attention will be drawn to the differences between experts' and civilians' values and the way experts took up their role. Finally, more general visioning issues that appeared from the cases will be discussed.

Measuring values

The methods derived from empirical studies on environmental values proved to be a good basis for the elicitation of values prior to and during the visioning process.
The method that lies closest to the general practice of visioning was the presentation of the participants' individual dreams. In both cases the moderators instructed the participants to explain the reasons for having a certain dream. This method proved to be an accessible way for the participants to discover and express their values. As the values are directly shared with others, this method works very well as an introduction and stimulates mutual learning.
Since the sessions in Arnemuiden had many participants, the valuation during the sessions was aimed at the ranking of landscape elements to easily measure and analyze the values. In order to give the most valued elements a prominent place in the dream, several methods were used; semi-structured interviews, a questionnaire, workshops with discussions, a story and a map. Prior to the initial meeting, 60 semi-structured interviews showed that the existence of surface water was viewed as the most important element in the area, apart from four other characteristics: nature, history, recreation and housing. During the initial meeting all participating civilians were asked to rank the listed landscape elements according to their importance to the area. The results confirmed the earlier insights from the interviews. Using different methods among the same respondents made data triangulation possible, which led to a more valid elicitation and a solid basis for the final scenarios.
The approach used in the Beuningen case was somewhat different. Instead of valuing landscape elements the participants presented their personal dream image to the rest of the group. The aim was to elicit the values of all participants concerning the floodplain and to reach a rather deep level by focusing on nature only, e.g. the definition of nature, how it should be managed and the functions it could fulfil in the floodplain. Since the individual dreams were rather general descriptions of landscape elements and the floodplain, they were too broad to directly base a shared dream upon. Two sessions of map drawing bridged this gap between the individual and the shared dream. During this map drawing phase the elicitation of values and mutual learning continued.
The small group in Beuningen allowed working jointly with all participants and with a more open and qualitative method, whereas in Arnemuiden the elicitation of values was partly carried out in smaller subgroups in order to make possible plenary discussions on the participants' reasons for having a certain dream image. Nevertheless, the small number of participants in Beuningen also had disadvantages, e.g. many public values of the floodplain were not represented. A survey among the population which was carried

out prior to the visioning sessions only partly solved this problem. After the organizers presented the survey results to the visioning participants, only the civilians saw any need to give it attention. During the sessions they often referred to the survey result that particularly older civilians enjoy the area. It made them think about the accessibility of the area for those who are not as vital as they are. This way some values of absent civilians became part of the visioning process. Nevertheless, the choice to highlight certain issues was rather arbitrary and depended on the willingness of the participating civilians to bring it in. Therefore, the final dream image cannot be regarded as a representation of the values as held by the local community.
To make civilians part of the visioning process is an important requirement for the incorporation of public values during the visioning sessions. The Beuningen case shows that also the incorporation of values measured prior to the sessions among a large population group predominantly relies on the Participation of civilians in the visioning process. The presentation of the survey results to all participants could only become part of this process when it was brought into the discussion, a task that was solely carried out by civilians. They defended the values of absent civilians with as much enthusiasm as their own. None of the experts referred to the survey; clearly they did not regard it their task to explicitly bring these values to the table. A visioning process consisting of merely experts would therefore seriously hinder the incorporation of public values.

Experts

The elicitation of values based upon methods evaluated above, shows that experts' values deviate from those of civilians. In the Arnemuiden case both scenarios as designed by the civilians included a new waterway connecting the centre of the village to Lake Veere. Yet the experts expected this to be very expensive and alternatively proposed the development of an inland lake instead of an open waterway. However, the civilians did not appreciate this because they wanted boats to navigate from the lake to the centre in order to stimulate recreation and to restore the water related history of the area.
From their point of view the inland lake would be no alternative at all.
The Beuningen case shows many differences in Visions of Nature, but unlike the Arnemuiden case the division was not between experts and civilians. The river manager's dream for the area was open agricultural grassland without trees because this is the best way to keep the water level of the Waal river low. The farmer had somewhat the same vision, although he also recognized that the land in the floodplain is not very profitable for agriculture anymore. The nature conservation agencies were in favour of wilderness with forest and side channels to lower the water level. All civilians took a middle position; they accepted the 'wilderness' vision of the nature conservation agencies while at the same time valuing the former grassland that used to be managed by local farmers. This clearly shows that the visions of experts were largely influenced by the organisation they represent, while civilians made a combination of the experts' visions.
The Beuningen case also demonstrates that not only their profession or hobby but also the participants' gender influenced their vision. Despite many attempts to reach an equal split between men and women, the sessions were still dominated by men.

When the only female civilian described her enjoyment of the birds and her daily astonishment at nature's beauty, the contrast with the down-to-earth stories of the male civilians and especially the rational and economical vision of the farmer became very apparent. She openly admitted that she felt insecure expressing this sentimental minority voice, and apologised for not being as clever as the rest. Yet, when she decided to quit for this reason, all participants persuaded her to stay saying that they all greatly appreciated the diversity in visions that she contributed to.

These examples show that a diversity in participants results in a broad range of values that are likely to be overlooked in a planning process that only involves experts. Nevertheless, reaching effective interaction between experts and civilians also provides some difficulties that require a solution. First, in both cases the experts had to get used to the co-operating with civilians. In the Arnemuiden case the experts' role was to assess the feasibility of the civilians' dream scenarios in between the sessions. Although rather unfamiliar to them it was a quite influential role. The experts also provided suggestions for improvement of the plans; hence the experts were supportive to the civilians and less dominant than they used to be in planning processes. At the beginning the experts did not appreciate their new role; they expected a slow and ineffective communication process. They preferred to develop plans themselves to be presented to the civilians afterwards. In fact, they felt threatened in their position and feared the civilians would obtain too powerful a role. Ultimately, it worked well, even though some experts still disagreed. The civilians appreciated the meetings without the presence of experts as they felt able to speak out more freely, not being cut off when ventilating unproven or unfamiliar ideas, and not hindered by experts pointing at "realism" and cost limitations. Additionally, it prevented the experts from overruling civilians' ideas based on familiarity with the material, rich vocabulary and presentation skills. Two precautionary measurements were taken to prevent this from happening in the Beuningen case, where civilians and experts shared the same table. Firstly, the organisation of an information session for the civilians prior to the dreaming sessions. During this meeting the civilians became acquainted with the organisers, the setting, the other participants, the issues at stake and they were informed about the next sessions. Secondly, the first couple of sessions had rather strict time schedules with limited speaking time for each participant in order to prevent the experts dominating the discussion. These measures turned out to be sufficient; although the civilians were still uncertain about their presentation skills during the first three sessions, they took the lead in presenting visions on the area in the fourth session.

Despite their somewhat different task in both cases, dreaming in Beuningen and assessing the visioning results in Arnemuiden, the experts adapted quite well to their new role. The Arnemuiden case shows that the participating civilians and experts do not necessarily have to take part in visioning jointly. Most important is that civilians have the opportunity to express their values freely without the predominance of experts. Presupposing that these conditions are met, our experiences show that members of public are perfectly capable of expressing their values.

Visioning

The Beuningen and Arnemuiden cases demonstrate that visioning can be organised in various ways. An important aspect is how to deal with differing values. Discussing values puts conflicts and disagreements on the table from the very beginning of the process. By explicating why they valued certain aspects, participants gained understanding from others for their stance, resulting in moderation of positions and potential conflicts which enhanced mutual learning. During the process the dreams of most participants were influenced to some extent by the values of others, which is an important step towards a joint vision. In the Beuningen case the civilians quickly learned and used the experts' knowledge and vocabulary, while the experts increasingly accepted the civilians' values. It took the civilians only one or two sessions to familiarise themselves with the concepts and the problems in the area. At the same time, the experts became acquainted with the angler's fishing experiences, the farmer's cynicism caused by yet another obstacle to earning his livelihood, the strong attachment of some civilians to the area and the role the floodplain played in their daily lives.

The importance of this mutual learning became clear during the last session, when an expert joined who did not attend the preceding sessions. He formed a sharp contrast with the other experts when he persistently tried to convince the others of his viewpoints. It took more than half an hour before he and the others found a common language and accepted each other's reality so that they could start working on a shared dream. Yet, at the end of the meeting he was still not convinced of the civilians' perspective.

It is not only the openness and acceptance of the others' values that enables mutual learning. It is also the insight into the reasons behind their values. These reasons might form a basis for common ground or mutual understanding. In the Arnemuiden case some participants favoured the preservation of the historical character of the area while others wanted to maintain the peace and quietness of the area. However, through discussing their goals and arguments it turned out that despite their differing values these groups shared the same vision on the area if put in more concrete terms, e.g. the preservation of an open, partly agricultural area with original vegetation and possibilities for nature recreation. Hence, by explicating arguments different positions found common ground. The same occurred when discussing housing development in the area. While the civilians favoured new housing in order to enable the young and elderly to stay in the village, the municipality promoted it to finance other developments such as recreational activities.

Common ground for mutual understanding was also found in the Beuningen case when the flood protection measure to cut down trees in the floodplain was at issue. The respondents of the survey were very much opposed to this measurement as were most participating civilians. Nevertheless their opinion changed during the dreaming process, influenced by the farmer's and river manager's values. The idea of some patches of grass land in between the forest sounded very appealing to the civilians. Their reason for supporting this idea, however, was somewhat different. They appreciated especially the open view over the river from the dike as they could see the river without having to cross the floodplain. The experts were very receptive to the civilians' views of the area,

which made discussions efficient and consensus within reach. Two reasons may explain the experts' open attitude. Firstly, the result of the visioning was non-binding so they did not have any responsibility towards their organisation to gain advantage. Secondly, the positive input of the civilians showed the experts that civilians can be reasonable Partners instead of the opponents they usually meet in conflict situations. These two reasons do not hold for the Arnemuiden case because the result of the experiment was more binding, as it arose from a conflict between the municipality of Middelburg and the civilians. Since the visioning process provided for support of the main developments in the area the municipality is expected to recognize the relevance of the final dream scenarios which partly overlapped with the plans previously presented by governmental parties. However, this time the public values were included as well. Thanks to the visioning experiment the municipality and civilians were able to break out of the deadlock situation in which the civilians preferred the status quo and obstructed all initiatives of the municipality.

Conclusion

In this paper we have tried to get an empirically based answer to the question how public values of the landscape can be incorporated in an early stage of planning; joint visioning. We especially focused on 1) the evaluation of the methods to elicit values, 2) the role of experts and 3) reaching consensus in the visioning process. As to the first, the Arnemuiden case shows that the use of various methods proved to be worthwhile to make triangulation possible which strengthened the validation of the results. In-depth interviews with potential participants gave a valuable preview on their values. This preview was used in the design of the sessions and for a more reliable elicitation based upon triangulation. Yet, semi-structured interviews can only elicit the values of a relatively small group. The alternative is a large scale survey among the population as carried out in the Beuningen case. Nevertheless, when this method is used, it is difficult to bring respondents' values to the discussion during visioning because only a few of them will take part in the sessions. The respondents of the survey, therefore, need 'ambassadors' who demand attention to the values of those who are not participating. As experts will be bound to serve the interests of their organisation civilians are most likely to take up this role. Hence, their presence in joint visioning proves to be an important condition to incorporating the respondents' values in the process.
As to the second, both cases show that civilians are well able to express their values in a visioning process where experts are also taking part, assuming that experts cannot dominate the process. Although the Arnemuiden case shows that civilians and experts have differing values, the Beuningen case demonstrates that this is not always true. The differing values in Arnemuiden are probably a result of the deadlock situation which the municipality and the civilians had run into prior to the experiment. The Beuningen participants did not have a conflict before the experiment, their values were primarily linked to their profession, hobby or gender.

As to the third, both cases show that the elicitation of values contributed to consensus in the visioning process. Despite differing values, discussing the reasons behind them may make the participants understand the others' position resulting in a joint search for a shared vision. In the Arnemuiden case this led to the design of two scenarios that did not deviate much from the plan the municipality presented earlier. The main difference is, however, that civilians were part of the process; they were taken seriously and their values formed the basis of the scenarios. This implies that eliciting public values in a visioning process will not ultimately lead to a totally different plan as they form only a part of a larger planning process that has to deal with many physical and organisational limitations. The merits of the elicitation of public values in visioning therefore, lie in strengthening mutual learning.

This paper confirms the outcomes of studies such as (Fischer 2000; Nowotny et al. 2002; Rinaudo and Garin 2005) that experts and civilians may reach a very effective social learning process, and by doing so they may even be able to overcome conflict situations that find their origins in differing values. The elicitation of values supports this learning process because it gives insight in to what is most important to each participant. It also supports the conclusion of Keulartz et al. (2000) that reaching this deeper level may be a basis for consensus. This paper thus demonstrates that visioning with the public has the potential to lead to an inspiring mutual understanding between civilians and experts, and that they are able to truly dream together.

Visions of Nature and river management

Exploring the relationship between public environmental ethics and river policies in northwestern Europe

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Two styles of river management can be distinguished: dike reinforcement and the more sustainable 'Room for River' option. This paper investigates public adherences to these two management styles and whether their adherence correlates with their Visions of Nature. The focus is especially on people's image of the appropriate human/nature relationship, i.e. Mastery over nature, Stewardship of nature, Partnership of nature or Participation in nature. Other variables that are part of the analysis are the respondents' Sense of Place, leisure experiences, flooding experiences, safety perception and background variables. The results of this survey among river side residents in France, Germany and the Netherlands (N= 1811) show high adherences to the Room for River style and a rejection of dike reinforcement. Adherence to the widening of the river correlates with the image of Stewardship, while adherence to dike reinforcement is predicted by Mastery over nature. Thus, according to the public a policy shift from dike reinforcement to a more sustainable style is seen as a fundamental one, connected to a change in environmental ethics.

Introduction

As a result of global warming, North Western European countries are likely to be confronted with more extreme high water levels of rivers in the near future. At the same time, sustainability emerges as a dominant driver of international policy, yielding a different approach to flood defence. Instead of fighting and controlling flood hazards with ever higher dikes, new management styles focus on *"understanding and managing the flood risk"* (Samuels et al. 2006). In the Netherlands a national policy called 'Room for River' embodies this approach. Room for River aims to create more space for the (occasional) storage of water by relocating dikes land inwards or constructing side channels. In an attempt to combine a larger discharge capacity with other functions these measures often go hand in hand with river restoration, nature conservation and recreation (Wiering and Driessen 2001; Van Stokkom 2005). Although only Britain has a comprehensive Room for River policy like the Dutch (Defra 2005), many river projects elsewhere in Europe are in line with the Room for River approach (Rohde et al. 2006), such as the removal of trees in the floodplain and the construction of a spill over or retention area.

Public support for Room for River policies has been well documented in the Netherlands (Van Welie 2001; Intomart 2008) and is found to be high. To this general finding De Groot and de Groot (2009) have added that public support to specific Room for River measures may be lower e.g. when these comprise the removal of trees.

The present paper expands these descriptive data to include also France and Germany, where public attitudes toward the Room for River policy style are as yet unknown. Our special interest, however, is to gain insight in the factors that may explain people's level of adherence to Room for River policy. Does people's adherence correlate with their general ethics on nature, with how they use the river, with their sense of place, with their age, or with none of these? Within this range of factors, our special interest is with people's ethics of nature. Are beliefs that people have about the appropriate relationship between humans and nature reflected in their opinions on more concrete policies such as Room for River?

My special interest is to assess whether levels of adherence to river management styles resonate with public environmental ethics. It investigates lay people's images of the appropriate relationship between human and nature with the HaN (Human and Nature) scale. Based upon philosophical classifications, this multi-dimensional scale measures the respondents' adherence to four relationships with nature i.e. Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature. Until today, the HaN scale has primarily been used in the Netherlands and in some small-scale studies in Germany (Lindemann in press), Canada (De Groot and Van den Born 2007), Czech Republic and Poland (Hunka et al. 2009), making the present study the first large-scale survey beyond Dutch borders.

Based upon previous studies the following three hypotheses can be formulated regarding the interrelationships between the adherence to flood risk management style and environmental ethics:

31 This study was supported by funds of NWE-ENO (Interreg IIIb 'Freude am Fluss') and BSIK Leven met Water. The author would like to thank Wouter de Groot for his valuable comments on the text and all French and German project Partners who assisted with the practicalities of the survey, especially Marie Fournier. Address correspondence to M. de Groot, Centre for Sustainable Management of Resources, Radboud University, P.O. Box 9010, 6500GL Nijmegen, the Netherlands.

1 Dike reinforcement will *correlate with a different image* of the human/nature relationship than the sustainable style does. Adherence to dike reinforcement is likely to correlate with adherence to the image of Mastery over nature, while the support for Room for River correlates with adherence to more ecocentric images, such as Partnership with nature. Suppose this hypothesis is true, then a policy shift towards more sustainable management would receive more public support when public environmental ethics are also changing or have changed in a nature friendly direction. Although deep core beliefs are very stable and difficult to change (Sabatier and Jenkins-Smith 1993), many Dutch scholars (Disco 2002; Van der Brugge et al. 2005; Van Heezik 2007) suggest that the Room for River policy is indeed based upon a different stance on nature. After the century long 'battle against the water' this new policy is based upon 'living with water' (Wiering and Arts 2006); the ethic of Mastery is changing into a true cooperation between humans and nature (De Groot 1987). Looking at Room for River as based upon more ecocentric images is also logical when taking into consideration its links with emergent principles in water management such as the ecosystem based approach (De Groot and Lenders 2006).

2 Both management styles *correlate with the same image(s)* of the human/nature relationship. This hypothesis presupposes that both dike reinforcement and the sustainable alternative are based upon a despotic ethic and would connect to the ethics of the public as long as they adhere to the image of Mastery over nature. Van Hemert (1999) for instance claims that Room for River in the Netherlands is not a policy shift towards truly eco-centered measures, but rather a shallow discursive shift of engineers who scrutinise and control nature in a more sophisticated way.

3 Images of the human/nature relationship *do not correlate with or differentiate between* the management styles. This would indicate that the ethics of the public are not very decisive in their adherence to the management styles. This outcome would support the hypothesis of Norton (1991) who states that weak anthropocentrists tend to endorse the same policy goals as ecocentrists. In that case the differences in public environmental ethics hardly predict the public support for flood risk management.

In order to test the hypotheses this paper will elaborate first on the background of Visions of Nature studies. Then a number of other (river related) issues will be presented that are also expected to predict and explain the adherences to the management styles, such as Sense of Place, safety perception, recreation experiences and background variables. After the description of the methods, the analysis will show the levels of adherence to the two flood risk management styles, the Visions of Nature and the other variables. The analysis winds up with a regression analysis showing their interrelationships. Finally, the last section will give a short discussion on the results and the methods used.

Human/nature relationships and river meanings

The images of the human/nature relationship are part of the broader 'Visions of Nature' concept as described by Van den Born et al. (2001). They distinguish three components; 1) images of nature (what is nature?), 2) values of nature (why is it important?) and 3) images of relationship (what is the appropriate relationship between humans and

nature?). All three components reflect issues that are subject to debate among environmental ethicists. Therefore the empirical study into lay people's Visions of Nature can be called empirical philosophy or folk philosophy (Van den Born 2008).
Many philosophers refer to these as (basic) attitudes (Barbour 1980; Zweers 2000) or world views (Norton 1991). These views do not necessarily have to be a well developed philosophy, but they can also be a number of assumptions the respondents hardly ever recognise or think about (Norton 1991). Although this paper primarily focuses on the third component, image of the human/nature relationship, I recognise the many interrelationships between the three Visions of Nature components. Therefore the images of nature and the (intrinsic and instrumental) value of nature will also be part of this study.
The images on the human/nature relationship are based upon the philosophical classification of Kockelkoren (1993) into Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature. In the first image, Mastery over nature, human beings stand above nature and may use it as they please, unfettered by moral restraints. In Stewardship of nature, human beings have the responsibility to take care of nature towards God or future generations. Although this image is less anthropocentric, the Steward resembles the Master in the positioning of human beings above nature. Partnership with nature is a metaphor for an equal relationship between human beings and nature: They work together in a dynamic process of mutual development (De Groot 1992). In the most ecopocentric image, Participation in nature, human beings are part of nature in the sense that the connectedness with nature gives meaning to the Participant's life (Zweers 1995).
Previous Visions of Nature studies based upon both open ended semi structured interviews and the HaN-scale (De Groot and Van den Born 2003; Van den Born 2006; Van den Born 2007) show that the Dutch reject Mastery over nature and embrace Stewardship of nature. Yet, this Stewardship turns out to be a different variant from the traditional one; instead of placing humans above nature the respondents adhere to a Steward that is part of nature. They tend to combine Participation with Stewardship. Although interviews in Canada (De Groot and Van den Born 2007) confirmed these findings, there is still much unknown about lay people's images of relationship in other parts of the Western World. The present study therefore also includes respondents living in France and Germany.
When searching for other studies in this field we find empirical work of some environmental ethicists such as Norton (1991), Keulartz (2004), Berghöfer et al. (2008) and Minteer and Mannings (1999) who all show that primarily nature-friendly ethics prevail among the Western population. When searching beyond philosophy, many relevant studies can be found. Most famous is the New Ecological Paradigm Scale (NEP) of Dunlap et al. (2000), which measures ecological world views. Although the wide use of this scale has given great insight into ecological beliefs around the world (Dunlap 2008), this scale primarily elicits degrees of anthropocentrism (Van den Berg et al. 2006), ranging from Mastery to Stewardship. The respondent can only agree or disagree on this narrow representation of environmental ethics without any differentiation in ecocentric alternatives. This is a large deficit, when considering the ecocentric ethics as elicited in previous HaN-studies and the generally high scores on intrinsic value statements (Thompson and Barton 1994; Widegren 1998).

An other scale, which focuses on the more ecocentric end of the spectrum is the Connectedness to Nature Scale of Mayer and Frantz (2004). Although their statements are much in line with the affections and experiences in nature that form a central theme in ecocentric relationships, the scale does not measure environmental ethics. A study that covers both ends of the spectrum is the study into anthropocentrism and ecocentrism of Thompson and Barton (1994). As their description of ecocentrists show; *"To ecocentrics nature has a spiritual dimension and intrinsic value that is reflected in their experiences in nature and feelings about natural settings."*, they combine values and images of nature in order to capture a world view regarding the stance of humans in nature. In that sense the study of Thompson and Barton (1994) can be regarded as the forerunner of HaN-scale studies. In addition to anthropocentrism and ecocentrism the HaN-scale also fills in the 'middle ground' between these two ends by eliciting Stewardship of nature and Partnership with nature.

As said, beside the images of relationship many other factors can be expected to predict and explain the adherences to flood risk management styles. In search of variables that should be taken into account, the interpretative investigation conducted by Davenport and Anderson (2005) turned out to be a valuable basis due to its inductive character. Based upon semi-structured interviews they distinguished four meanings that community members in Nebraska attribute to the Niobrara River, i.e. the river as sustenance, as nature, as tonic and as identity. 'River as sustenance' establishes the river as a scarce and highly coveted source of water and economic revenue. 'River as tonic' conveys the river as *"good for the mind, body and soul"*. 'River as nature' expresses the respondents' appreciation for the river's ecology, and 'river as identity' ties the river to people's sense of who they are. In an attempt to adapt these four river meanings to the North Western European situation, "river as sustenance" was dropped because previous interviews (De Groot and De Groot 2009) suggested that this aspect of the river played a minor role in the personal lives of river residents. They hardly lingered over their dependence on the river for their water supply or over river related economic activities in general. In line with the study of Buijs (2009) and De Groot and De Groot (2009) questions on flooding were included instead, because of its obvious relatedness to river management. Davenport and Anderson's river meanings are a result of a Grounded theory approach that started from Sense of Place theories. Therefore the meanings 'river as tonic' and 'river as nature' lack a theoretical grounding. In this study 'river as tonic' was measured based upon a theory on leisure experiences and the theoretical concept used for 'River as nature' was 'Visions of Nature'. In order to better express the theoretical background I decided to name the meanings according to the theories used; 'Sense of Place', 'Leisure experiences' and 'Visions of Nature'. Since Visions of Nature are already highlighted above, I will here give a brief overview of the theory used to measure the other three river meanings.

First, leisure experiences were measured based upon the typology of Elands and Lengkeek (2000), developed after Erik Cohen's phenomenological *"modes of tourist experience"*. Leisure experiences are regarded as *"a confrontation with out-there-ness"*, *"a play with what is masked in everyday life"*. The typology can be seen as a continuum that runs from experiences in which the difference between out-there-ness and everyday life is rather small ("Amusement" and "Change") to those where the "Other" is rather unknown and inaccessible ("Interest" and "Rapture"). In the last experience,

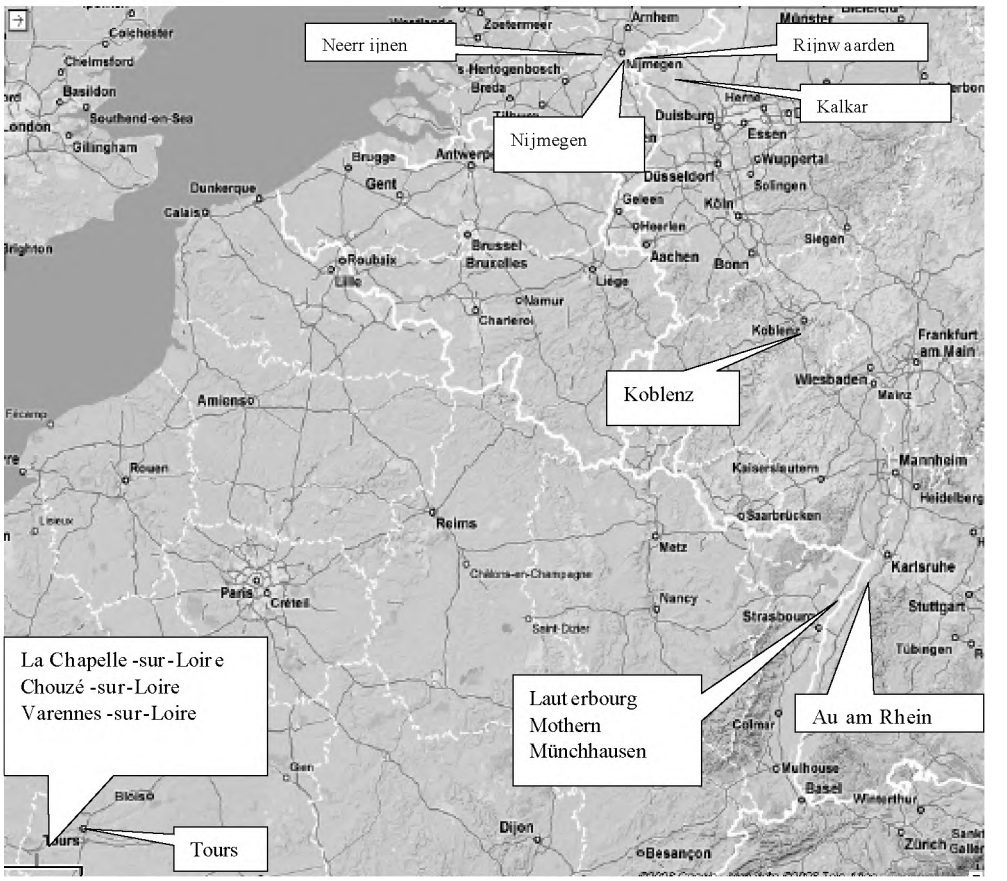
"Dedication", the unknown has opened up and became part of normal life. Since both river management styles result in a different landscape and thus different opportunities for certain leisure experiences this typology is expected to correlate with adherence to management styles.
Secondly, Sense of Place (SOP) is part of the rather fragmented literature on people and spatial settings comprising other concepts, such as place attachment, place identity and place meaning. Although many scholars studied the attachment to the urban environment, some situate their studies in a more rural setting (Jorgensen and Stedman 2001; Wiborg 2004), in an outdoor recreation context (Eisenhauer et al. 2000; Kyle et al. 2001) or in a certain landscape type, such as a wilderness (Williams et al. 1992; Sharpe and Ewert 2000) or a river (Bricker and Kerstetter 2000; Davenport and Anderson 2005). The indicators used in this study are based on the Sense of Place-scale of Jorgensen and Stedman (2001), who define Sense of Place as: *"The meaning attached to a spatial setting by a person or group"* (p.233). They measure Sense of Place in three dimensions, namely identity (beliefs about the relationship between self and place), attachment (emotional connections to place) and dependence (perceived behavioural advantage of a place relative to other places). Note that Sense of Place partly overlaps with the leisure experiences. While strong attachment to a place is obviously the basis of "Dedication", the other experiences can be regarded as more moderate or very light forms of Sense of Place. See Shamai (1991) for an overview of different gradations of Sense of Place that show remarkable resemblance to the leisure experience typology as described above. Based upon the study of Buijs (2009), sense of place is expected to correlate negatively with adherences to Room for River, because this measure has more impact on the identity of the riverine place.
Thirdly, previous experience with flooding, the likelihood of having one's house flooded and safety perception are expected to influence the adherence to flood risk management. This correlation is easy to discover directly after a flood event has taken place, because in these situations the support for the reinforcement of dikes among the afflicted residents is generally high. Previous studies on risk perceptions of river floods in Europe, however, show that normally the risk perception of the public is low, especially in the Netherlands (Heykers 1998; Maters 2000; Van Welie 2001; Milieu- en Natuurplanbureau - RIVM 2004; Krasovskaia 2005; Buijs 2009).

Methods

This study focuses on river residents (defined as people living within 6 kilometres from the river) because compared to the population at large they are most confronted with new flood risk measures. In France, Germany and the Netherlands a total of 7100 civilians were selected living along two major rivers; the Loire and the Rhine. In each country the sample consisted of one city between 100,000 and 150,000 inhabitants and two rural areas consisting of small villages (less than 5,000 civilians per village).
The selected villages and cities were not confronted with flood risk measures in the recent past or near future, to avoid a bias as a result of ongoing conflicts in river management. The selected cities, Koblenz (DE), Nijmegen (NL) and Tours (FR) all have rural surroundings. In France, a selected rural area is along the Loire, consisting of the

villages La Chapelle-sur-Loire, Chouzé-sur-Loire and Varennes-sur-Loire. The other area is on the French bank of the Rhine (Lauterbourg, Mothern and Münchhausen) with the selected village Au am Rhein on the German side. The second German municipality, Kalkar, is very near to the Dutch municipality of Rijnwaarden. The other Dutch municipality is Neerrijnen along the Waal. As shown in figure 5.1, the German and French villages along the upper Rhine and the Dutch and German municipalities along the lower Rhine share the same landscape. In this way it is possible to compare areas in different countries that share a similar landscape and to compare areas within a country that have different landscapes in order to get more insight in the role different countries and landscapes play in adherences to management styles.

Figure 5.1 *Map of the selected areas*



All questionnaires were sent out from the Radboud University in the Netherlands. Since the respondents in Germany and France are not acquainted with this university the response rates were expected to be lower in these two countries. Therefore, 2100 questionnaires were sent in the Netherlands, 2500 to France and 2500 to Germany. The civilians were randomly selected from the municipalities' birth registers. Since it was not possible to receive (digital) data from the French municipalities, the addresses were selected from the telephone book. Presumably, this caused a lower response rate

because the addresses are not up to date which makes it impossible to direct the letter to a certain family member. Of all questionnaires sent out, 714 were returned from the Netherlands, 483 from France and 614 from Germany. Within each country, the response was equally distributed among the selected locations. Chi-square tests between the sample and the population living in the municipalities showed that the sample was representative with regard to the sex of the respondents. Concerning age, only the samples in Nijmegen, Au am Rhein and Tours showed an underrepresentation of the younger generation (18 to 30 years). After weighting the sample with a maximum of 3, this age category was still underrepresented in Tours (20.9 % instead of 34.9%) and in Au am Rhein (3.6 % instead of 18.2). [32] In general the weight factors used were moderate; 90% of the cases were weighted with a factor lower than 1.6. All data was entered and analyzed in SPSS statistical software.

A large part of the questionnaire measured Visions of Nature. The images of the human/nature relationship and the value of nature were elicited with 21 statements of the HaN-scale, which included one statement on intrinsic and one on instrumental value. In order to arrive at this scale, the latest version of the HaN scale (De Groot and De Groot 2009), was translated into French and German and validated in approximately 15 semi-structured interviews per country. These interviews revealed whether the public interprets the items in the same way as intended by the author and, at the same time, tested the clarity of the translation. Based on these interviews and the results of the pilot, 14 items were selected for this study, because they were clear to the respondents, they represented the images of relationship well and could be translated into both French and German without changing the undertone. In addition, seven items were newly developed in order to ensure a more complete representation of every image of the human/nature relationship. For instance, a new Stewardship item to test the outcomes of previous studies was: *"Human beings are part of nature and are also responsible for it".* The result was the list of items as shown in table 5.1. All respondents could indicate their levels of adherence on a five-point scale running from "strongly agree" to "strongly disagree" or as on a sixth "don't know" category. Since the HaN-scale does not measure what the respondents consider nature, it was followed by a question on the image of nature, which consisted of nine types of nature, such as a canal, a front garden or the sea. The selection of these types of nature was partly derived from previous studies in the Netherlands and France (Buijs and Volker 1997; Collomb 1998; Van den Berg 1999; Van den Born et al. 2001; De Groot and Van den Born 2003). The respondents were asked to indicate the naturalness of these types of nature on a five point scale running from "very natural" to "very unnatural".

Five different leisure experiences derived from the classification of Elands and Lengkeek (2000) were represented in the questionnaire by a short description for each experience. All described experiences started with *"I go to the river to...",* for instance the description of Change was; *"I go to the river to get out of the daily grind, to escape from my daily activities. At the riverside I can relax and recover."* (The most important facets for each experience were derived from both the theory and the most valid items from eight previous studies by Elands and Lengkeek (2000)). The respondents were asked to what

32 http://www.statistiques-locales.insee.fr/esl/baseTelechSelect.asp?IdSousTheme=4&Origine=theme
http://statline.cbs.nl/StatWeb/selection/default.aspx?DM=SLNL&PA=03759NED&VW=T
https://www-genesis.destatis.de/genesis/online/logon?language=en

extent they recognised themselves in the descriptions and to indicate their answer on a five point scale running from "strong" to "weak". Furthermore, three items measured the three components of Sense of Place as described by Jorgensen and Stedman (2001). The items are based upon their scale and applied to the river, resulting in the following statements: *"The river Rhine/Loire does not mean much to me" (identity), "I miss the river Rhine/ Loire when I do not go there for a while"* (attachment), and *"The things I do along the river, I could just as well do somewhere else"* (dependence). The responses could be given on a five point scale running from "strongly agree" to "strongly disagree". Safety perception was measured with the following statement: *"I feel threatened by floods in the place I live"*. In addition, the respondents were asked if their house can flood in case of a dike burst and if they have ever experienced flooding. The adherences to the flood risk management styles were measured with a description of each style. The description was as follows; *"Style 1: The river was given more room, which prevents very high water levels. To reach this, at some places a dike has to be replaced more inland, in the course of which housing has to yield or has to be adapted. But in case of a dike failure there is not so much danger because the water level is not so high."* The description of dike reinforcement was; *"Style 2: The river does not get more room, which causes the water level to rise higher in case of peak flows. Higher dikes have to be built to control the water. The river does not have to be given more room, but it is more dangerous if the dike fails."* The respondents were asked to indicate their opinion on each management style in three Likert scales running from "very bad" to "very good", from "very unsafe" to "very safe" and from "very unnatural" to "very natural".
Finally, the questionnaire tapped the respondents' background variables such as: sex, age, educational level, the distance between their house and the river, the number of years living along the river and the frequency of their river visits.

Results

This section will first show the respondents' adherences to the images of the human/nature relationships, followed by the results on the other river meanings and background variables. Then a figure shows the adherences to the two management styles and the section concludes with two regression analyses.

1 Visions of the human/nature relationship

Concerning the human/nature relationship, the scores of all respondents on the 21 HaN items were entered into a factor analysis (varimax with Kaiser normalization), a method that groups items to which the respondents tend to respond in a similar way.
The resulting groups (called factors) represent concepts that the respondents regard as coherent. Although these concepts do not necessarily have to coincide with the theoretical human/nature relationships, the results of the analysis into four factors showed a close resemblance. This analysis (Table 5.1) explained 36% of the variance and Cronbach's alphas were running from 0.68 for Partnership to 0.73 for Mastery. This is reasonable when taking into consideration the small number of items per factor. In order to check whether respondents from all three countries distinguish the concepts in the same way, three factor analyses were made, one for each country. Since only slight

differences could be noted between the overall international factor analysis and the three separate analyses, the international one was considered to be representative for all respondents and functioned as the basis for further analysis.

Table 5.1 *Factor analysis of the HaN-scale*

Mastery over nature	Factor loading	Level of adherence	Standard deviation
M Human beings have more value than nature	0.641	-0.43	1.259
M We must especially protect animals that are useful for human beings	0.421	0.19	1.345
M Because I can think, I am more important than nature	0.743	-0.88	1.154
ST Although we stand above nature, we do need to take good care of it	0.628	0.27	1.306
Level of adherence:		**-0.48**	**0.898**
Guardianship of nature			
St Human beings have a responsibility to conserve the natural environment	0.629	1.65	0.625
St Human beings are part of nature and are also responsible for it	0.634	1.50	0.741
St We have to ensure that we leave enough nature intact for future generations	0.500	1.75	0.651
Pt Human beings are part of nature	0.486	1.50	0.782
Pr We must not set ourselves above nature, but must work together with it	0.502	1.50	0.721
Level of adherence:		**1.58**	**0.488**
Partnership with nature			
Pr People and nature are of equal value	0.508	0.86	1.213
Pr I would like to have a relationship with nature just like I have with my friends	0.552	0.79	1.035
Pt I can have a relationship with nature just like I have with my friends	0.544	0.47	1.057
Level of adherence:		**0.71**	**0.857**
Participation in nature			
Pt When I am surrounded by nature I experience something greater than mankind	0.430	0.91	1.064
Pt It would be wonderful to join the wild geese on their yearly journey	0.501	0.50	1.250
Pt I would like to spend a week entirely alone in the forest, in order to feel one with nature	0.623	-0.24	1.265
Pt I often feel an intense connection with nature	0.569	0.74	0.977
Pt I sometimes feel one with the universe	0.616	0.04	1.114
Pr I would like to have a relationship with nature just like I have with my friends	0.421	0.79	1.035
Level of adherence:		**0.40**	**0.808**

The extraction method for the analysis was principal axis factoring. The level of adherence is the mean of all respondents' scores, which ranged from -2 for 'strongly disagree' to 2 for 'strongly agree'. Cronbach's alpha's were as follows: Mastery 0.70, Stewardship 0.73, Partnership 0.68, Participation 0.73. The abbreviations of the items refer to the original images of relationship: M= Mastery, St =Stewardship, Pr= Partnership and Pt= Participation. Excluded from the analyses due to low factor loadings are: 'Human beings have the right to alter nature radically' (0.386 Mastery), 'Technological progress will enable us to solve environmental problems in the future' (0.317 Mastery), 'Nature wants to grow, prosper and develop, just like humans do' (0.356 Partnership, 0.358 Stewardship) and 'Natural sites are important, even if they are not useful to us human beings' (0.358 Stewardship).

When looking more closely into the meaning of each factor, we see that in general the respondents largely reproduce the classification into Mastery, Stewardship, Partnership and Participation. However there are some differences concerning Stewardship.
The analysis groups not only Stewardship items into one factor, but also two statements that regard humans as part of nature; *"Human beings are part of nature"* and *"We must not set ourselves above nature..."*. In contrast to the theoretical Steward of nature, the respondents do not link a caring attitude towards nature with the idea that human beings are higher-ranked than nature. The Stewardship item that connects these two themes *("Although we stand above nature, we do need to take good care of it")* ends up in the factor of the Master. Clearly the respondents regard the higher ranking of humans above nature as part of Mastery instead of Stewardship. Moreover, the factor analysis shows that Stewardship as distinguished by the public is the only image that correlates with the item on intrinsic value. Although the factor loading (0.358) was not high enough to include it in the table, it does indicate that the public distinguishes a more ecocentric variant than the theoretical Steward. In order to distinguish the empirical Steward from the theoretical one, the empirical one was named Guardian of nature. This name implies a more humble position towards nature and is roughly based upon de Groot's (1992) Guardianship of nature as a more ecocentric variant of Stewardship.
Secondly, the factor analysis shows that the Partnership items seem most difficult to place for the respondents. The factor has a lower reliability (Cronbach's alpha 0.68) and one statement *("I would like to have a relationship with nature just like I have with my friends")* is part of both the Partnership and the Participation factor. Both the public's different interpretation of Stewardship and the difficulties regarding Partnership confirm previous results on an international level (De Groot and Van den Born 2003; De Groot and De Groot 2009). Finally, the inclusion of the Stewardship item in the factor of Mastery makes that image milder and more in line with an 'enlightened Master' than a true despot over nature.
To get a better understanding of the popularity of each image of relationship, the percentage of respondents that (strongly) agrees with a factor was calculated. Respondents with an average score of 1 (agree) and above, were grouped into an image. Although this method allows respondents to be grouped into none, one or more images, it clearly indicates to which images most of the riverside residents adhere. With 91% of the respondents included, Guardianship then proves to be a massive mainstream concept, followed by the Partner (52%) and the Participant (28%). A small minority of 15% adhered to Mastery, among whom relatively many Dutch. When looking at the differences between the three countries, we see that only 34% of the French respondents adhered to Partnership. An explanation might be found in the French validation interviews, in which some respondents felt awkward with a human relationship as a metaphor for a human/nature relationship. This feeling is strengthened by the French vocabulary that includes many verbs that specifically refer to inter-human contact and which are rarely used in the context of human/nature relationships. Finally, the number of Germans that adhere to the ecocentric images is above average, especially in case of the Partner (70%).
Finally, to get more insight in what the respondents regard as nature, the image of nature was measured by means of nine items representing different nature types. Among all nationalities, the respondents perceive the sea, a spontaneous forest, a swamp and a

river as very natural. A factor analysis into two factors confirms that the respondents regard these four nature types as a coherent group, while a canal, a city square with trees, a front garden, a planned forest and a grain field constitute the other. The first factor was called "pure nature" and the second "cultivated nature". In general, the responses from all three countries are rather similar, especially concerning the nature types that are grouped and labelled as "pure nature". This implies that the respondents have a rather similar image of nature while completing the items on the human/nature relationship. This also applies to the naturalness of the river. Despite the differences in river landscape between the three countries, they all quantify a river as "natural" to "very natural".

2 Leisure experiences

The respondents primarily visit the river to escape from their daily routine (Change). They do not recognise themselves in the descriptions of the other experiences, resulting in negative mean scores, running from -0.20 for "Dedication" to -0.70 for "Interest". The respondents from the Netherlands and Germany answer according to the same pattern. The only difference is that in Germany the responses are more extreme, especially concerning "Change', "Rapture" and "Dedication". The respondents in France deviate from this pattern: they rarely look for amusement during their river visits and are not as averse to taking an interest in the area (Interest) and to having intense experiences (Rapture). Especially the positive French responses on Dedication stand out (mean 0.34); apparently they feel some attachment to a certain place which they regularly return to.

3 Sense of place

Two indicators for sense of place, identity and dependence, were inverted and then combined with the item on attachment into one reliable variable (Cronbach's alpha=0.77). All respondents did not really feel connected to the river (mean 0.23). In France the mean score is significantly higher ($p<0.001$), which is in accordance with the higher response on the leisure experience of Dedication in this country. In Germany the very negative response on Dedication (mean -0.48) forms a sharp contrast with the weak connection they feel to the river (mean score of 0.25). Presumably, the Germans feel somewhat attached to the river landscape in general but not with a specific place near the river to which they regularly return.

4 Flood safety

The low mean score of safety perception in table 5.2 shows that the respondents do not feel threatened by floods in the place where they live. A regression analysis shows that especially the respondents living in Rijnwaarden (Netherlands) feel significantly safer, while those living in Kalkar, Au am Rhein (Germany) and Tours (France) feel less safe but still not threatened ($p<0.05$). Further, respondents who never experienced the effects of flooding feel even less threatened ($p<0.001$), just like respondents who indicated that their house cannot flood in case of a dike burst. Note that the question on the likelihood of having one's house flooded leaves the judgment to the respondent. The response does not necessarily reflect the actual situation and can also be influenced by the respondents' safety perception. Respondents who feel safe might tend to indicate

that their house cannot flood and vice versa. Yet, a rough comparison between the percentage of respondents indicating their house can flood with the geographical settings of the samples indicated that most respondents did asses the factual situation properly.

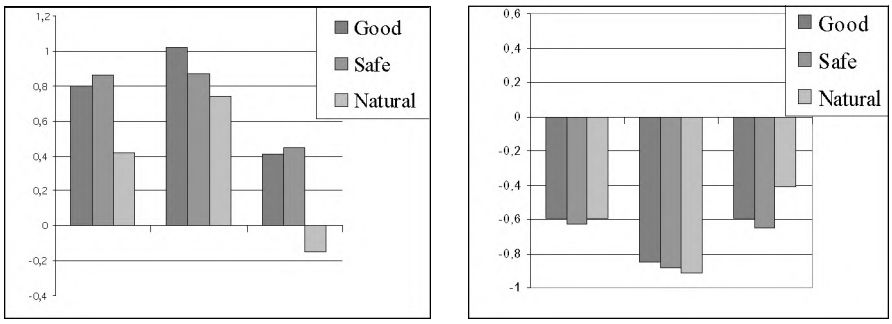
5 Background variables

The age of the respondents ranged from 18 to 75 in Germany and the Netherlands, which represents the range of the sample population. In France the age ranged from 17 to 93 years old. The descriptive statistics of table 5.2 show that the research population had an equal split between men and women. The respondents all live very close to the river: 92% live within 6 kilometres of the river, 62% live within 2 kilometres.

River management

In their overall evaluation of the two management styles, a large majority of the respondents (65.7%) regarded the Room for River style as good or very good while only 14.3% responded positively to the description of dike reinforcement. Their opinion on the safety of both styles is in line with this overall judgement, meaning for instance that dike relocation is not only regarded as bad but also as unsafe. The high correlation between the perceived safety of the measures and the overall evaluation suggests that safety forms an important consideration in the respondents' general judgment. This is in line with the expectations because safety is the leading principle for both management styles. Nevertheless, as a consequence both answers might be biased by the use of the word 'danger' in the description. This raises questions on the validity of the results, an issue that will get more attention in the discussion.

Figure 5.2 *Mean scores for flood risk management styles*



All items had three five-point Likert scales running from -2 for 'very bad', 'very unsafe' and 'very unnatural' to +2 for 'very good', 'very safe' and 'very natural'.

As shown in figure 5.2, respondents from Germany and the Netherlands regard the sustainable style as natural, while the French respondents perceive these interferences as slightly unnatural. This is not due to the Loire being the most natural river included in this survey, because the residents of the French villages along the (canalised) Rhine also consider the interventions to give the river more room as unnatural, especially when compared to their German neighbours. For each management style, all three indicators

(good, safe and natural) were combined into one variable, resulting in a Cronbach's alpha of 0.76 for the sustainable style and 0.81 for dike reinforcement.

Interrelationships

All independent variables were entered into two regression analyses, one for each management style. Table 5.2 shows that the independent variables explain 17% of the support for Room for River while dike reinforcement has an explained variance (R2) of 9%. Despite the rather low overall explanatory power, the table shows some interesting partial correlations regarding visions on the human/nature relationships and leisure experiences.

Table 5.2 *Descriptive statistics and regression analysis of "Room for River" and "Dike reinforcement".*

		Regression		**Descriptive statistics**		
Independent variables		Dependent variables				
Interval variables		Room for River beta	Dike reinforcement beta	Mean	Standard deviation	Cronbach's Alpha
1	Human/nature relationship Mastery	0.05	0.10***	-0.19	0.94	0.70
	Guardianship	0.09***	-0.03	1.58	0.49	0.73
	Partnership	0.02	-0.04	0.71	0.86	0.68
	Participation	0.04	-0.08**	0.40	0.81	0.73
	pure nature	0.02	-0.12***	1.68	0.50	0.75
	cultivated nature	0.02	0.11***	0.18	0.86	0.79
2	leisure experiences Amusement	0.03	0.04	-0.39	1.39	
	change	0.13***	-0.07**	1.00	1.11	
	interest	0.08**	-0.06*	-0.70	1.23	
	rapture	-0.12***	-0.08**	-0.31	1.31	
	dedication	0.02	0.03	0.20	1.36	
3	sense of place	0.00	-0.05	0.22	0.84	0.77
4	flooding					
	safety perception	0.03	-0.07	-0.80	1.31	
Dummy variables		B	B	Distribution %		
	experienced flooding	0.00	-0.00		18.6	
	possibility of flooding	-0.06	-0.05		56.1	
5	background variables sex (man)	-0.11	-0.08		47.8	
	age (41- 65)	0.17***	-0.15**		49.4	
	age (65 and older)	0.09	-0.03		15.9	
	lower secondary education	-0.19**	0.00		28.0	
	higher secondary education	-0.15**	-0.03		24.6	
	college/university	0.04	-0.01		31.5	
	NL - Nijmegen	-0.22**	-0.11		13.0	
	Rijnwaarden	0.14	0.17		14.1	
	DE - Kalkar	0.10	0.03		13.0	
	Koblenz	0.22*	-0.12		10.5	
	Au am Rhein	0.00	0.04		9.6	

		Regression		Descriptive statistics		
Dummy variables		B	B	Distribution %		
	FR - Rhine villages	-0.23*	0.12		8.2	
	Tours	-0.78***	0.23*		9.1	
	Loire villages	-0.19	0.02		9.0	
	religious	-0.04	-0.09		28.6	
	slightly religious	-0.51	-0.04		36.0	
	far from the river (4-6 km)	0.04	-0.07		18.4	
	20-39 years living near river	-0.06	-0.02		31.0	
	≥40 years living near river	-0.04	0.02		36.7	
	daily river visits	-0.10	0.09		13.4	
	weekly river visits	0.02	0.19		35.9	
	monthly river visits	0.04	0.07		34.2	
R^2		0.17	0.11			

*Significance: *= p<.05 (1-sided test), **=p<.05 (2-sided test), ***=p<.01 The standardised coefficients (beta) do not present the predictive power of the dummy variables, therefore the table shows the unstandardised coefficients (B) for the dummy variables. In order to make a comparison between the predictive powers possible, betas are used for the interval variables.*

Starting with the vision on the human/nature relationship, we see that adherence to the image of Guardianship correlates with adherence to Room for River. This means that respondents associate this sustainable style with taking responsibility and caring for nature. In accordance with the first two hypotheses dike reinforcement is predicted by the image of Mastery over nature. Dike reinforcement is also predicted by the two images of nature. Respondents with a relatively high score of naturalness on the image of pure nature are more inclined to reject the description of dike reinforcement in the questionnaire. Suppose that an individual regards a river, a swamp, a spontaneous forest and the sea as very natural, then in his/her eyes, dike reinforcement is a violation of the pure river landscape. The positive correlation between acceptance of dike reinforcement and the naturalness ascribed to the image of cultivated nature confirms this result. Respondents that score high on this variable have a broad image of nature. They tend to include, for instance, a front garden and a canal in their definition. Logically, their opposition to the idea of dike reinforcement is weaker since they are more likely to perceive this intervention as non-destructive to nature.
Concerning the leisure experiences, high scores on both Change and Interest predict support for the sustainable style. Respondents that visit the river to get out of the daily grind and those who have some interest in its history and nature are more in favour of this management style. The respondents expect that the Room for River style fits very well with these two leisure experiences. The negative correlation with dike reinforcement indicates the opposite. The experience of Rapture has a negative predictive power on both management styles. The respondents' search for an intense experience is expected to be difficult in a landscape where flood risk measures have taken place. The respondents expect Room for River to be more in contrast with the experience of Rapture than dike reinforcement. This is unexpected, since this sustainable style is often presented as fitting very well into nature development projects

that give the public the opportunity to have wilderness experiences. Clearly the respondents do not follow this line of thought, but instead reject the large scale interventions that are often involved in Room for the River projects.
Contrary to my expectations, Sense of Place, Safety perception and previous experiences with flooding do not have predictive power. Presumably the influence of these variables rise as soon as specific measures are planned in the nearby floodplain or when a (near-) flood has recently taken place. The background variables show that middle-aged respondents (41-65 years) favour the Room for River style much more and are less supportive of dike reinforcement than the younger generation (18-40 years). Characteristics that make respondents less supportive for Room for River are a secondary educational level or residence in Nijmegen, the French Rhine villages and especially Tours. At the same time the respondents living in Tours are more in favour of dike reinforcements.

Discussion

The objective of this paper has been to get insight in public adherences to two flood risk management styles and four images of the human/nature relationship. Based upon previous studies, three hypotheses were formulated regarding the effect public environmental ethics have on their adherence to flood risk management styles. The first hypothesis presupposed that dike reinforcement correlates with Mastery while a sustainable style correlates with a more ecocentric ethic. The second hypothesis presupposed that both management styles would correlate with Mastery over nature. The third hypothesis did not expect that differences in public environmental ethics would predict adherence to any management style.
Looking into the empirical results, we see that the public distinguishes a somewhat ecocentric variant of Stewardship wherein humans are not placed above nature. This image was labelled Guardianship and proved to be the dominant ethic in France, Germany and the Netherlands. The image of Mastery was also distinguished as less anthropocentric than a true despot. Nevertheless, Mastery was massively rejected in all countries, especially in Germany and France. This indicates that the public of North Western Europe is even more beyond Mastery than was expected based upon previous studies in the Netherlands. Concerning the river management styles, the respondents adhered much more to the Room for River than to dike reinforcement. Especially the respondents in Germany and the Netherlands are very taken by this style. This cannot be explained by the different (Loire) river landscape in France because the respondents living along the French side of the Rhine also did not reach the high adherence levels of their German neighbours.
When moving towards the interrelations between public environmental ethics and adherences to the two management styles, we see that Mastery correlates with dike reinforcement while Guardianship correlates with the sustainable style. This is in line with the hypothesis that presupposes that both styles are based upon a different ethic. According to the public a fundamental change takes place within flood risk management when shifting from one style to the other. While the acceptance of the first

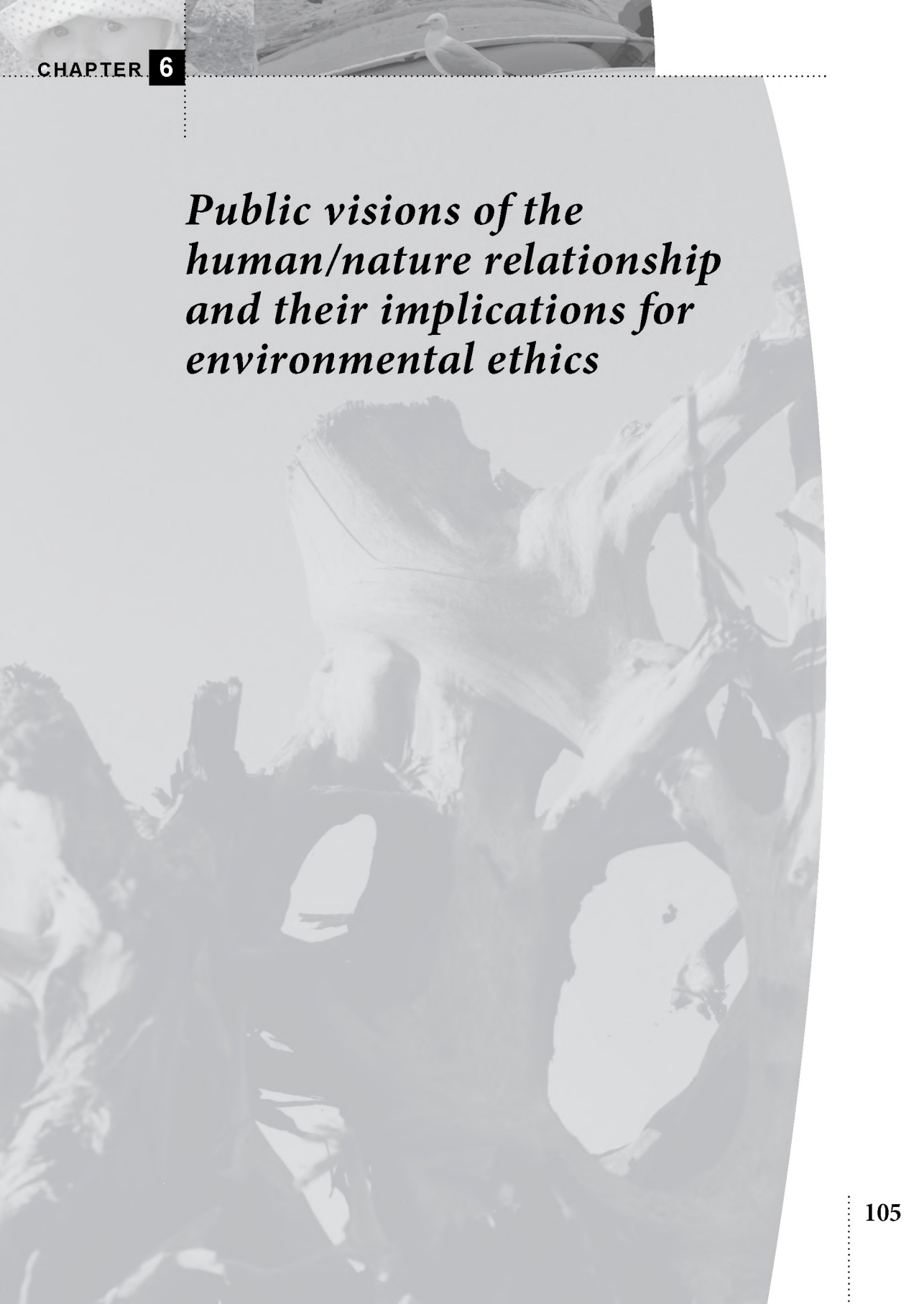
hypothesis automatically implies rejection of the second hypothesis, the third can still be true because not all images of the human/nature relationship correlate with the adherence to the management styles. The image of Participation does not predict any style, while the image of Partner only negatively correlates (with dike reinforcement). This leaves the door open for the third hypothesis that presupposes that environmental ethics are not very important in predicting public adherence to policy. Norton states in this hypothesis that weak anthropocentrists can arrive at the same policy goals as ecocentrists. Theoretically, more ecocentric river policies are quite imaginable. Here, however, it may have been that the descriptions of the two management styles (e.g. lacking landscape descriptions) do not relate readily enough to the wordings of the Partnership and Participation items.

For interpreting these conclusions, it is important to take the low explanatory power (R2) of both regression analyses into consideration. Moreover, the ethics of the public are only one variable among many others that predict the adherence to each river management style, such as recreation experiences, the place (or country) of residence and the age of the respondents.

Further, some methodological considerations need to be noted. First, the use of the word "danger" in the description of both management styles might have caused a bias in the responses. The adherences to dike reinforcements in this paper appear to be very different from a study of De Groot and de Groot in the Netherlands wherein riverside residents qualified dike reinforcements as safe. This difference is partly due to the bias the word "danger' evoked and partly because the current questionnaire informed unaware respondents of the danger involved in dike reinforcements. The question is which measuring instrument best presents the opinion of the public; the one that leaves the respondents unaware of the danger or the one that makes it explicit. A comparison between the adherences to Room for River in this paper with previous surveys on *Room for River* in the Netherlands shows enough similarity to conclude that the responses on this style were not biased due to the word 'danger' in the description in the questionnaire. A second methodological consideration is the low response rate in France and Germany. This might have biased the sample towards residents that are more involved with nature and the river, resulting in higher scores on for instance Sense of Place and ecocentric values and relationships.

Guardianship is a very popular image among the North Western European public, forming a solid ethical basis in society for Room for River. On the other hand, dike reinforcement lacks such a basis because the public fiercely rejects Mastery over nature, the human/nature relationship associated with this management style. Since the more ecocentric images of relationship like Partnership and Participation are also popular among the population, river managers in North Western Europe have a solid public basis to try to incorporate more ecocentric values in their long-term policies and move beyond the relatively incremental and technical Room for River policies that prevail at present. Such explorations should be undertaken in a manner that includes civilians from the very beginning so that parties can jointly learn from each other in an open process.

Public visions of the human/nature relationship and their implications for environmental ethics



CHAPTER 6

Public visions of the human/ nature relationship and their implications for environmental ethics

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Accepted by: Environmental Ethics

A social scientific survey on human/nature relationships in northwestern Europe shows that the public clearly distinguishes between anthropocentrism and ecocentrism, but also between two non-anthropocentric types of thought, which may be called Partnership with nature and Participation in nature. In addition, the respondents distinguish a form of human/nature relationship that is allied to traditional Stewardship but has a more ecocentric content, labeled here as Guardianship of nature. Further analysis shows that the general public does not subscribe to an ethic of Mastery over nature. Instead, practically all respondents embrace the image of Guardianship, while the more radical relationships of Partnership and Participation also received significant levels of adherence. The results imply that environmental ethicists should no longer assume that the ethics of the public are merely anthropocentric. Finally, we dispute the idea of a single form of ecocentrism and propose a hermeneutic virtue ethics approach to study the interface between ethics and action.

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Introduction

In 1967, Lynn White published his "The historical roots of our ecological crisis" that made a strong case for pinpointing Christian beliefs as the root cause of the despotic attitude of Western humans towards nature. The ensuing discussions focused on the contributions of other sources of Western culture to this attitude, such as Greek philosophy and the Enlightenment. Several eco-philosophies, such as eco-feminism and deep ecology, took the all-pervading world view of Mastery over nature as their starting point (Warren and Cheney 1991; Fox 1995).

All the while, the prevailing world view in the West was regarded as a given. Nobody really questioned to what extent the image of Mastery over nature as the predominant Western world view would actually be true. Does the public in Western societies really adhere to that image? That is one of the questions we will address here, based on a survey in northwestern Europe. As it will show, the primary answer is that in people's own "folk philosophy", Mastery over nature is strongly rejected and that other, much more ecocentric visions in fact predominate – visions that show a remarkable congruence with notions from academic environmental ethics.

We regard these outcomes as highly relevant for environmental philosophy. First, insight in the prevailing Western world views would prevent (further) unnecessary speculation on this issue. Further, it may be good for environmental philosophers to know how their concepts and debates relate to those held in society. Are we flogging an empirically dead horse, or reworking a generally held mainstream image? Are we exploring issues that are quite new compared to prevailing public visions, or the reverse, do we fail to pay attention to ethically relevant concepts that live in the public mind? To take one example, empirical studies showed that public opinion massively subscribes to the idea of the intrinsic value of nature (Thompson and Barton 1994; Grendstad and Wollebaek 1998). What should environmental philosophy now think of its own tendency to view intrinsic value as an inherently problematic concept? We are far from suggesting that philosophical issues can be democratically decided upon, but we do contend that awareness of public visions is good for philosophy.

Ours is not the first empirical study on people's perceptions of the relationship with nature. In the next section, we will therefore start out to discuss some influential previous studies. Second, we will summarize some classifications of human/nature relationships that constitute the backbone of our empirical work. These classifications may cover a wide spectrum, consisting of dominion over nature, Stewardship of nature and oneness with nature. Third, we will describe the method and content of the survey, based on one such classification, which contains four relationships: Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature. The outcomes of the survey are then presented and discussed, focusing especially on their implications for environmental ethics.

Studies on public views of the human/nature relationship

A subject such as human/nature relationships lends itself well to open or semi-structured interviews as the core research method. And indeed, several examples of this approach can be found in the literature. One example is Kempton, Boster and Hartley (1995), who carried out extensive interviews in the US and found three prevailing beliefs about nature; *"nature as limited resource upon which humans rely"*, *"nature as balanced and interdependent"* and lastly *"society and nature"* including the alienation of nature and idealization of the environmentalism of primitive peoples (Kempton et al. 1995). In a recent issue of *Environmental Ethics*, another example reports on a study carried out in South Chile in which various types of relationship were identified, spread out over the quite distinct population groups in the area. One was an *"embedded relationship with nature"* with strong overtones of connectedness. Another was a *"cultivating relationship with nature"*, in which many elements of Stewardship were found. Only two of the 67 respondents had a purely *"resource-use relationship"* with nature, resembling the despot or Mastery image discussed earlier. Other images were characterized mainly by the aesthetic and intellectual admiration for nature (Berghöfer et al. 2008).

Studies such as these are well suited to uncover the qualitative richness of people's visions at specific locations. Survey research on the other hand, with written questionnaires and high numbers of respondents, usually generates stronger quantitative results. It is often thought that surveys cannot yield qualitative insights, but that is untrue; if well designed and analyzed, surveys are able to generate empirically grounded classifications as well, as we will show later.

Survey studies on the public visions of the human/nature relationships are not very common because these visions are only poorly represented in the most commonly used type of questionnaires, which are based on the New Environmental Paradigm (NEP) scale of Dunlap and Van Liere (1978). This popular instrument consists of fifteen statements ("items") on which the respondents are requested to indicate their degree of agreement. The original NEP scale originates from 1978 and was revised in 2000 (Dunlap et al. 2000). The revised NEP scale measures people's world views, based on the following five themes: limits to growth, anti-anthropocentrism, the fragility of nature's balance, the possibility of an eco-crisis and rejection of exemptionalism (the idea that humans are exempt from the laws of nature).

Dunlap et al. designed the NEP scale arguing that environmentalism holds a challenge to our fundamental views about nature and our relationship to it. Yet, most NEP-statements do not measure a human/nature relationship but rather people's cognitive awareness of the consequences of harming the natural environment *(Schultz 2001)*. Only three NEP statements capture aspects of the human/nature relationship on the world view level. They are *"Humans have the right to modify the natural environment to suit their needs"*, *"Plants and animals have as much right as humans to exist"*, and *"Humans were meant to rule over nature"*. The problem that remains here is that ecocentric people can only answer to agree or disagree with these statements. Any type of differentiation between *kinds of* ecocentrism is beyond the NEP scale. This is not a marginal issue

because, as mentioned in the previous section, the vast majority of people in Europe and the US are ecocentric, acknowledging as they do that nature has intrinsic value, which is often seen as the watershed between pure anthropocentrism and (degrees of) ecocentrism.

Another and more recent instrument designed for use in written questionnaires is the "Connectedness to Nature Scale" (CNS) which consists of 14 statements. Mayer and Frantz describe the CNS as *"a new measure of individuals' trait levels of feeling emotionally connected to the natural world"* (Mayer and Frantz 2004, p.503).

The statements all measure the affective bonding between humans and nature that often form the core of ecocentric human/nature relationships. With statements like: *"I often feel a sense of oneness with the natural world around me"* and *"like a tree can be part of a forest, I feel embedded within the broader natural world"*, the CNS fills much of the affective and ecocentric gap left by the NEP scale. This choice makes CNS vulnerable to a new criticism that mirrors the problems with NEP: all its statements are affective, and its sole focus on connectedness with nature precludes differentiation with other ecocentric views, e.g. those of people who do not feel very connected with but yet very responsible for nature (Stewardship).

The present study is based on a third measuring instrument for written questionnaires, the Human and Nature (HaN) scale. This scale attempts to capture a full range of human/nature relationships, expressing a philosophically based classification developed in the Netherlands in the early 1990s. A number of previous studies (De Groot and Van den Born 2003; Van den Born 2006; De Groot and De Groot 2009; Hunka et al. 2009), mainly carried out in the Netherlands, have led to the development of some 21 statements in this scale, with four to six statements together designed to represent one type of relationship. [33] In the next section, we will take a look at the philosophical roots of the HaN classification.

Classifications of human/nature relationships

The Human and Nature scale is based on a classification of Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature.

The articulation of this type of classification started out with a number of Anglo-Saxon scholars desiring to offer an alternative to White's (1967)one-dimensional analysis of Western people as Masters over nature. In *Man's responsibility for nature*, John Passmore (1974, p.13) acknowledged that *"Christianity has encouraged man to think of himself as nature's absolute Master, for whom everything that exists was designed"*. Subsequently, Passmore pointed at two minor traditions: *Stewardship and Co-operation* with nature. The Steward of nature is a *"farm-manager, actively responsible as God's deputy for the care*

[33] Other studies that (partly) cover the subject of human/nature relationship and that were subject to consideration while developing the HaN-scale are: Buijs, A. E. (2009). "Lay people's images of nature: frameworks of values, beliefs and value orientations" Society and Natural Resources 22(5): 417-432.; Kaltoft, P. (1999). "Values about Nature in Organic Farming Practice and Knowledge." Sociologia Ruralis 39(1): 39-53.; Kellert, S. R. (1989). Perceptions of Animals in America. In: R. J. Hoage Perceptions of Animals in American Culture. Washington DC, Smithsonian Institution Press: 5-24.; Van der Windt, H. J., J. A. A. Swart and J. Keulartz (2007). "Nature and landscape planning: Exploring the dynamics of valuation, the case of the Netherlands." Landscape and Urban Planning 79: 218-246.; Minteer, B. A. and R. E. Manning (1999). "Pragmatism in Environmental Ethics: Democracy, Pluralism, and the Management of Nature." Environmental Ethics 21(2): 191-208.

of the world". According to Passmore, this post-Platonic idea can barely be recognized in Christian teachings. In the tradition of Co-operation with nature, humans work together with nature in order to perfect it. Because it is human interests and designs that drive this completion of the universe-in-the-making, co-operation still implies some form of Mastery over nature. As Marcuse, Fichte and Hegel suggest, this is a necessary stage to liberate nature from its negativity.

In line with Passmore, Ian Barbour (1980) depicted the Greek-Christian tradition as the cause of the dominating world view in European history. In the US, the frontier experience reinforced these exploitative beliefs. Barbour describes a continuum, running from Domination via Stewardship to Unity with nature. Unity with nature is characterized as *"a strong sense of interdependence of humankind with other living things"* (p.20). Barbour's Stewardship forms a middle ground in the continuum representing both a rational efficient planner and a caretaker that recognizes the intrinsic value of nature. Barbour places himself between Stewardship and Unity, which is slightly more ecocentric than Stewardship, which in our society *"tends to be compromised in the direction of the Dominion view"* (p.29).

The Dutch contribution in this field was the articulation of Partnership with nature as a second image of the human/nature relationship at the ecocentric side of the continuum. Two preceding publications in *Environmental Ethics* played a key role here, Sara Ebenreck's *"A Partnership Farmland Ethic"* (1983) and Jim Cheney's *"The Neo-Stoicism of Radical Environmentalism"* (1989). Both authors find inspiration in eco-feminist writing and both authors use a rejection of rights-based thinking on intrinsic value as one of the steps to carve out their own ethics. Ebenreck reacts mainly to the Stewardship notion that she regards as much too weak and unrelated to act as a foundation for a balanced relationship between humans and the land. Cheney on the other hand seeks a position against the other side of Barbour's continuum, the Oneness-with-Nature deep ecology that is seen by Cheney as just a neo-stoic response to male alienation from the world and just the second prong of the masculine reflex to either conquer (Mastery) or fuse (deep ecology) with the lost Other. In the Netherlands, De Groot (1992) capitalized on this when he added sources from field biology and medieval mysticism to Cheney's account and articulated Partnership with nature as a "triple ethic", containing the intrinsic values of humans, of nature and of the intensity and harmony of their relationship. Partnership with nature may be regarded as an image particularly suited to the interactive "middle landscape" that Europe basically is, and making a step beyond the more typically American dichotomies of farms versus wilderness, humans versus nature (Minteer 2008).

Since its first inception, Partnership has been present in all Dutch overviews of the humans/nature relationship. [34] One example is the classification of Wim Zweers. A proponent of "Participation in nature" he puts his choice in context through a description of six relationships: Despot, Enlightened Despot, Steward, Partnership, Participation and "Unio Mystica". This classification divides Barbour's Stewardship into Enlightened Despot and Stewardship. The Enlightened Despot is a "wise use" manager,

[34] See for a summary of Dutch classifications: Van den Born, R. J. G. (2006). Implicit Philosophy : Images of the people-nature relationship in the Dutch population. In: R. J. G. Van den Born, R. H. J. Lenders and W. T. De Groot Visions of Nature, a scientific exploration of people's implicit philosophies. Berlin, lit-verlag: 61-84.

recognizing the boundaries of the ecosystem. Within the Stewardship notion, Zweers (2000) makes a distinction between anthropocentric and ecocentric Stewardship. Both acknowledge that nature has intrinsic value, but in anthropocentric Stewardship, this is seen as an ascription, a sort of gift of humans to nature that may theoretically be withdrawn. In ecocentric Stewardship, intrinsic value is 'objective', and the human act is only to discover it. Rodman's (Rodman 1983) classification of attitudes within the environmental movement shows a similar distinction between "resource conservation" and "wilderness preservation". In Zweers' articulation of the Partnership with nature, Partnership between humans serves as a metaphor for an egalitarian and relatively dynamic and voluntaristic relation with nature, in line with Ebenreck's vision and all other Dutch authors. Like Cheney, Zweers takes great care to distinguish his next (and favorite) image, Participation in Nature, from "Unio Mystica" (Oneness with nature), in which human identity is fused and annihilated in the great Whole of nature. In the Participation vision, Nature is indeed the great Whole rather than the system of relatively concrete entities of Partnership. The spiritual connectedness with this Whole is the key sentiment of Participation, but the human identity is maintained in this connection. Finally in this overview, it is noteworthy that Partnership articulators such as Cheney and De Groot reject the unidimensionality of the (often implicit) continuum suggested in any from-Mastery-to-Unity classification (Van den Born 2006). Partnership with nature and Participation in nature may rather be seen as two *different* ethics -one more feminine and one more masculine, as Cheney would add- of being with nature in this world.

For our survey, we took a four-tiered classification, Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature, as our point of departure, because these relationships were considered to cover the basic philosophies and to be distinctive enough for the respondents to understand.

From philosophical to empirical articulation

A survey was designed to investigate the content and distribution of images of the appropriate human/nature relationship in France, the Netherlands and Germany. Because this requires a large number of respondents, it was decided to distribute a written questionnaire. One of the consequences of this method is that the questions or statements should be short and clear because the respondents have to complete them without the assistance of the researcher. To avoid high costs, survey statements have multiple-choice answers (in our case, a five-point scale of "strongly disagree"/ "disagree"/ "neutral"/ "agree"/ "strongly agree"), leaving no room for the respondents to differentiate or explain their choice. This necessitates great care in the exact formulation of the statements that make up the scale.

In order to develop the HaN scale version to be used for the survey, 27 Dutch statements were translated into German and French with assistance of native speakers. Then, in each country, an interviewer discussed the statements with 15 lay people separately. For each statement, the interviewer asked which human/nature relationship it appeared

to represent, whether the statement was clear and what associations the respondent had while hearing it. These interviews showed which statements appeared to have lost or changed their meaning in the translation, or whether they were too vague for the respondent, or too difficult to classify into one of the four relationships. For instance, the statement *"we have to treat nature with much care"* was not specific enough and was classified as Steward, Partner and Participant. Other statements met incomprehension in only one of the three countries, i.e. in France where many respondents objected to the opposition of economy and ecology in the statement that *"nature cannot be allowed to stand in the way of economic progress"*. After an analysis of the interviews and a discussion with co-developers of the HaN scale, 14 statements were selected for the international survey. In order to ensure a full representation of each relationship, seven more statements were developed, resulting in the "2008 HaN scale" presented in Table 6.1.

Table 6.1 *The 2008 HaN-scale statements*

	Mastery over nature
1	Human beings have the right to alter nature radically
2	Technological progress will enable us to solve environmental problems in the future
3	Human beings have more value than nature
4	Because I can think, I am more important than nature
5	We must especially protect animals that are useful for human beings
	Stewardship of nature
6	Human beings have a responsibility to conserve the natural environment
7	We have to ensure that we leave enough nature intact for future generations
8	Although we stand above nature, we do need to take good care of it
9	Human beings are part of nature and are also responsible for it
	Partnership with nature
10	People and nature are of equal value
11	Nature wants to grow, prosper and develop, just like humans do
12	We must not set ourselves above nature, but must work together with it
13	I would like to have a relationship with nature just like I have with my friends
14	I can have a relationship with nature just like I have with my friends
	Participation in nature
15	When I am surrounded by nature I experience something greater than mankind
16	I often feel an intense connection with nature
17	I would like to spend a week entirely alone in the forest, in order to feel one with nature
18	Human beings are part of nature
19	I sometimes feel one with the universe
20	It would be wonderful to join the wild geese on their yearly journey
21	Natural sites are important, even if they are not useful to us human beings

The core of each relationship is represented by its first three statements. The others were designed to test hypotheses that were derived from previous studies or to give more insight in the way respondents tend to distinguish between the relationships. The statements are discussed below.

The first three items of Mastery highlight the right to mold nature to human needs (1), technological optimism (2) and the higher value of human beings (3). The next Mastery item (4) is roughly derived from Cartesian thinking and from previous interviews with Dutch and Canadian respondents. During these interviews many ran into conceptual difficulties when asked whether humans are part of nature and then often concluded that humans are most fundamentally different from nature due to their intellectual capacities. Finally, Mastery item 5 expresses the concept of instrumental value. Although we placed this statement under Mastery in the scale, it could also be part of an anthropocentric variant of Stewardship.

Of Stewardship, the first three statements represent a traditional Steward who takes care of nature (6), takes the next generations into account (7) and is positioned above nature (8). The last item (9) tests a hypothesis based upon previous findings in the Netherlands, namely that respondents prefer a Steward who is part of nature to the hierarchy as expressed in the traditional notion of Stewardship. This item integrates responsibility for nature with a positioning of humans within nature, analogous to a parent who is at the same time part of and responsible for the family. Although the position of God above humans is also an important element in many Stewardship images, we decided to keep religious concepts out of the HaN scale because earlier studies showed that such statements measure the general level of religiosity of the respondents rather than their opinion on Stewardship.

The first three Partnership statements reflect an equal value of both Partners in the interaction (10), in which both humans and nature desire to grow (11), and are supporting each other (12). Statement 12 also emphasizes the rejection of a hierarchical relation between humans and nature. The last two Partnership statements (13 and 14) originate from interviews in which respondents make a sharp distinction between the ideal of Partnership versus its practical possibility (De Groot and De Groot 2009).

The first three statements that present the Participant focus on experiencing nature as a great whole (15), the feeling of connectedness (16) and the desire to be in nature (17). The next statement (18) also expresses the inclusion of humans in nature but this item could also be interpreted in a narrow biological sense, i.e. humans as just one species among others. Statement 19 lies closest to Unity with nature and was taken up for two reasons, *(i)* to see if respondents would tend to group this statement together with Participation and not with, for instance, Partnership, and *(ii)* to measure the level of agreement of respondents with this radical (neo-stoic, as Cheney would have it) deep ecology.

The final two statements stand apart from the basic classification. Statement 20, expressing a desire to join the wild geese, is primarily meant to measure the respondent's 'romanticizing capacity' and also to see whether this statement would link up with Partnership (because nature here is a concrete entity rather than an overarching system) or with Participation (because of its connotation with lsosing one's regular Self).

Statement 21 is a simple expression of the intrinsic value of nature. The fraction of respondents who agree with this statement is interesting. Another reason to add this statement was to see if it would become associated with Stewardship or with the two more ecocentric images of relationship.
The questionnaire presented all statements in a random order. In addition to the HaN-scale, the questionnaire contained questions on background characteristics like age, sex, educational level and the frequency of visits to natural areas. A total of 7100 written questionnaires were distributed in France, Germany and the Netherlands, [35] resulting in 483, 614 and 714 returned questionnaires in these countries, respectively. Gender distribution was representative for the population at large, while in France and the Netherlands the younger generation (between 18 and 40 years old) was somewhat underrepresented.

Results

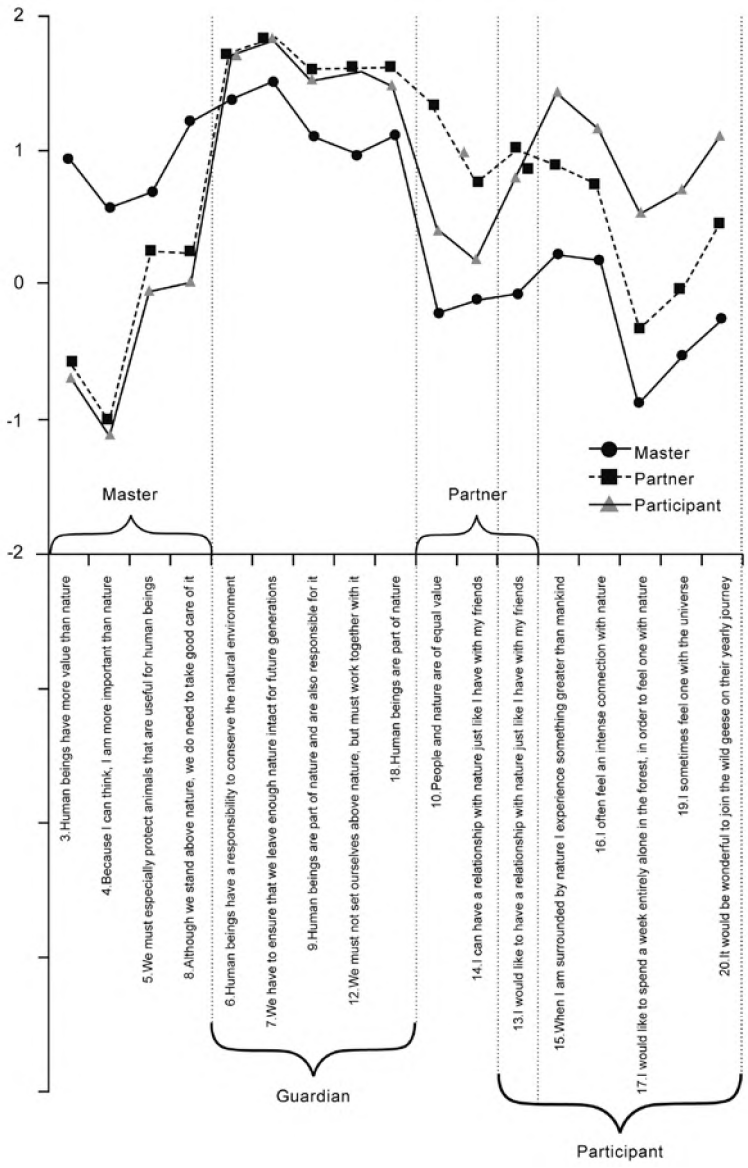
The questionnaires have been analyzed to yield a qualitative result and, on that basis, a quantitative result. The qualitative result is an empirically grounded classification of images of the human/nature relationships that the respondents distinguish, and the quantitative result is the degree to which respondents adhere to (agree with) these images. The classifications are generated with a statistical 'factor analysis'. This method identifies statements which are 'kept together' in the answers of the respondents. If, for instance, many respondents who agree with statement A, also agree with statements X and Z and vice versa, these three statements form one group, or one 'factor' as the statistical tool calls it. In our terminology, these statements form a single image of the people/nature relationship in the minds of the respondents. Jointly, the images emerging from the factor analysis form an empirically grounded classification of relationships – one that may well be different from the philosophically grounded classification that generated the statements, in Table 6.1. If the empirically grounded classification differs substantially from the original one, the researchers should express this by giving the empirical images(s) a new label.
In this section, we focus first on the classification findings and subsequently on the levels to which respondents adhere to these images of relationships.

The empirically grounded classification

The factor analysis showed that a classification with four images was the best fit for the data. [36]

[35] The survey was part of a larger mail-back questionnaire on flood protection measures, which was distributed among river landscape residents. In each country two rural areas (existing of villages below 5000 citizens) and one medium-sized city was selected (between 100.000 and 150.000 inhabitants). In France the city of Tours and the villages La Chappelle-sur-Loire, Chouzé-sur-Loire and Varennes-sur-Loire were selected along the Loire and along the Rhine the villages Lauterbourg, Mothern and Münchhausen. In Germany, all selected locations were along the Rhine; the villages of Kalkar and Au am Rhein and the city of Koblenz. The Dutch municipalities Neerrijnen and Rijnwaarden and the city of Nijmegen are all along the (lower) Rhine.

Figure 6.1 *Levels of adherences of three groups of respondents having either Mastery, Partnership or Participation as their favorite non-Guardianship image.*



The answers on the five-point scale were coded as -2 for "strongly disagree", -1 for "disagree", 0 for "neutral", +1 for "agree" and +2 for "strongly agree".

[36] The extraction method for the analysis was principal axis factoring. The best fit model was determined based on a scree plot and Kaiser's rule of thumb. We selected the loadings with a minimum of 0.400. All factors are reliable when taking into consideration the small number of items per factor. The Cronbach's alpha's were as follows: Mastery 0.70, Guardianship 0.73, Partnership 0.68, Participant 0.73. The factor loadings had the following ranges: Mastery 0.421-0.743, Guardianship 0.486-0.634, Partnership 0.508-0.552, and Participation 0.430-0.623. For further information on the statistics, see Mirjam de Groot (submitted) Visions of Nature and River management: Exploring the relation between ethics and river policies in northwestern Europe. For a copy, contact the author at mirjam.degroot@wur.nl.

The first image distinguished by the respondents was composed of most Mastery statements (3,4,5) of Table 6.1. All three statements express strong anthropocentrism. This empirical image, however, also includes a statement (8) designed to express Stewardship (*"Although we stand above nature, we do need to take good care of it"*). This did not lead to giving a new label to this image; we maintained the name Mastery but it should be noted that this Master is slightly more caring for nature than the more radical Master from the philosophical classification. [37]

The second image distinguished by the respondents contains all other original Stewardship items (6, 7, 9). Especially statement 6 and 7 represent indisputable Stewardship elements like responsibility and future generations. Yet, this image does not present Stewardship as traditionally known, because it also contains statements that were designed to represent Partnership and Participation (12, 18) in the original classification. Here the respondents express that in their minds, Stewardship values like responsibility and care are narrowly linked to a more humans-inclusive ecology. Statement 9 captures this in the one sentence that *"human beings are part of nature and also responsible for it"*. This makes the image much more ecocentric than traditional Stewardship. Moreover, the respondents also found the statement on intrinsic value (21) most in line with Stewardship. Although we cannot expect the respondents to fully understand the concept and its implications based upon this single statement it does show the initial reaction to the idea. The coherence with Stewardship did not reach the threshold to include it in figure 6.1, but it is high enough [38] to indicate that the empirical Stewardship represents a preservationist rather than a conservationist ethic. Largely in line with the classification of De Groot (De Groot 1992) we chose to call the image Guardianship of nature, the 'eco-variant' of Stewardship as opposed to the anthropocentric "Man the Caretaker".

The third image is composed solely of original Partnership statements. Clearly the respondents regard the statements on a horizontal relationship with nature as a coherent group. Nevertheless of all four relationships, Partnership is the most difficult to recognize as a coherent concept for the respondents. For instance, Partnership statement 13 also correlates with the image of Participation and is not regarded as expressing exclusively a Partnership notion. [39]

The last image contains all items that were intended to represent Participation. This image is dominated by affective statements that focus on the greatness of the holistic interdependent system of Being. Statement 20 (*"It would be wonderful to join the geese ..."*), also emerged as part of this image, suggesting that, in the minds of the respondents, the association with experiencing nature dominates over the more cognitive association of Participation in nature as a great system.

Overall then, it appears that the respondents clearly re-produce the philosophically grounded classification that was used as point of departure. This implies, inter alia, that respondents clearly distinguish between two types of ecocentrism (Partnership and

[37] In the sub-classification of Mastery in W.T. de Groot, *Environmental Science Theory: Concepts and Methods in a Problem-Oriented, One-World Paradigm* (Amsterdam, 1992), p 481-483, the least radical Master is called the Caretaker. The inclusion of statement 8 in Mastery gives this image a caretaker hue.

[38] The factor loading of 0.358 did not reach the threshold of 0.400, but can be considered as a moderate correlation.

[39] The loading of statement 11 is 0.552 on the Partnership factor and 0.421 on the Participation factor.

Participation). Within the classification, the empirically grounded image of Mastery is somewhat less anthropocentric than the philosophical one, and the 'middle ground' is more ecocentric than classic Stewardship (hence: "Guardianship").

Levels of adherence to the types of relationship

The fact that respondents distinguish between various relationships does not imply that they adhere to these relationships. If all respondents would say "strongly disagree" to all Mastery items, for instance, Mastery would become identified as a coherent image in the factor analysis but at the same time it would show to be rejected by all, with an overall level of adherence of -2. In this subsection, we report on these levels of adherence. Mastery over nature was strongly rejected, Guardianship was massively adhered to, and yet the two more ecocentric images, though less popular than Guardianship, were adhered to overall. This finding is based on taking simple means of the items belonging to each empirically grounded image, resulting in the following distribution: Mastery - 0.25, Guardianship + 1.64, Partnership + 0.71 and Participation + 0.55. This result can also be expressed by allocating images of relationship to respondents. With this approach only 15 percent of the respondents adhere to Mastery over nature. Guardianship of nature again proved to be immensely popular, with 91 percent of the respondents adhering. The second most popular relationship was Partnership with nature, adhered to by 52 percent of the respondents, followed by Participation in nature with 28 percent. Please note that the sum of all percentages exceeds 100 percent, indicating that people are found to adhere to more than one image of relationship. For example, the specific statement on intrinsic value of nature was adhered to by 90 percent of the respondents. [40]

Since practically all respondents adhere to Guardianship, it was difficult to arrive at more distinctive findings. It was therefore decided to differentiate respondents by their most popular *non-Guardianship* image of relationship, i.e. Mastery, Partnership or Participation. This method results in 14% Masters, 64% Partners and 29% Participants. [41] The lines in figure 6.1 represent the three groups and indicate how respondents thus classified as Master, Partner or Participant respond to all HaN-statements. The graph confirms that all respondents agree on the Guardianship statements. It also shows which themes are especially appealing to Masters in relation to Partners and Participants. The Masters score much higher on the valuation (3) and positioning (6) of humans above nature than the other two groups. The Partners also distinguish themselves mostly by the valuation of humans (14) and their stronger belief in the practicability of this relationship (15). The Participants stand out in their agreement to reside alone in nature (17), the ultimate form of Participation in nature.

[40] This number corresponds to previous studies: In Norway 83 percent and in Sweden 78 percent of the general public adhered to a statement on intrinsic value (Grendstad, G. and D. Wollebaek (1998). "Greener still? An empirical examination of Eckersley's ecocentric approach." Environmental Values **30**(5): 653-675.; Widegren, Ö. (1998). "The new environmental paradigm and personal norms." *Environmental Values* **30**(1): 75-100. In the US 80 percent of a student group adhered to intrinsic value (Thompson, S. C. and M. A. Barton (1994). "Ecocentric and Anthropocentric Attitudes toward the Environment." *Journal of Environmental Psychology* **14**: 149-157.

[41] The defining rule was that "adhering to A" (e.g. Mastery over nature) is anybody who agreed or strongly agreed on all items comprising the A image.

Finally, we analyzed to which extent some images of relationship might be more appealing to certain respondents. A regression analysis shows that women are relatively more in favour of Guardianship, Partnership and Participation. Because the empirically based Guardian leans towards ecocentrism, the answers of women can be regarded as relatively more ecocentric. The same answering pattern appears with respondents who frequently visit nature; they also tend to give more ecocentric answers. This is in line with the result of Mayer and Frantz, (2004) who reported that frequent nature visitors have a stronger connection with nature. Further, religious respondents are relatively more negative on all relationships except Guardianship. When comparing nationalities, respondents living in the Netherlands are the most moderate in their opinion on all images of relationship. Respondents living in Germany are more ecocentric than the Dutch; they adhere more to the Participant and are fiercer in their rejection of Mastery. The French are also more negative about Mastery than the Dutch but do not share the German enthusiasm for Partnership and Participation, because their adherence is relatively low on these images. [42]

We have seen here that the general public in Germany, France and the Netherlands hold world views concerning the human/nature relationship that link up well with articulations in environmental philosophy. Mastery over nature stands apart from Guardianship of nature, which in turn is distinct from a relational image of Partnership with nature and a holistic image of Participation in nature. Guardianship of nature is allied to traditional Stewardship, but with more ecocentric content. Guardianship of nature represents a massive mainstream concept to which 90 percent of the respondents agree. Contrary to many philosophical and popular convictions, Mastery over nature is rejected in all three countries, while Participation and Partnership have intermediate but still positive mean levels of adherence.

Two methodological caveats apply. First, while the applied statistical tool is able to assess whether respondents indeed classify world views in the same manner as does environmental philosophy (which turned out to be the case), the survey method cannot go outside the bounds of the philosophical classification that was used as starting point. Images of relationship that are different from the ones in the 'mother classification' cannot be found, e.g. nature as enemy, or nature as a capricious god, or nature that should be our Steward rather than the reverse. [43] Second, what we have measured here are world views of *individuals*, not of institutions. This theme will be picked up in the discussion.

[42] All correlations are statistically significant to a $p<0.05$ level. For a somewhat similar analysis based upon a survey in the Netherlands see De Groot, M. and W. T. De Groot (2009). "'Room for River' measures and public visions in the Netherlands: A survey on river perceptions among riverside residents." *Water Resources Research* **45**.

[43] This is African, see for instance: Zwaal, N. (2003). Narratives for Nature, Storytelling as a vehicle for improving the intercultural dialogue on environmental conservation in cameroon. Leiden, Leiden University. **Ph.D.**: 325. and Borgerhoff Mulder, M. and P. Coppolillo (2005). Conservation: linking ecology, economics and culture. Princeton Princeton University Press.

Discussion

The results of this survey have a number of implications for the agenda of environmental philosophy. In this section, we will explore some of these. Our first two points follow directly from the preceding sections. The last two points are more speculative, and focused on the difference between individuals and institutions.

1 Fighting straw men

The first and most obvious conclusion would be that environmental philosophers should be more aware that using Mastery over nature as the anvil to hammer out an argument may amount to fighting a straw man. Mastery over nature has all but disappeared as anything desirable in the minds of most people in Western societies. Virtually all respondents believe that humans are morally responsible for nature and recognize intrinsic value of nature. Environmental ethics is not an elite endeavour, but a commonly shared ideal in the Western world. It is interesting to note here that Arne Naess believed that most statements of his deep ecology platform would in fact be acceptable to the vast majority of people, [44] and would not (contrary to what many other deep ecologists claim) require a radical paradigm shift. [45] In fact, most western Europeans are sympathetic to even more radical forms of non-anthropocentrism. This does not mean, of course, that the environmental crisis will be solved automatically. We will return to this later on.

2 Articulating non-anthropocentric visions

A second issue emerging from this survey concerns the articulation of non-anthropocentric ethics. Our survey shows that most respondents not only distinguish between anthropocentrism and non-anthropocentrism, but also between two distinct modes of non-anthropocentric thought. Most people see a clear difference between the image that we should live and work with nature on a footing of equality, and the image that humans should somehow attune themselves to nature as the greater whole. We feel that this should stimulate philosophical efforts to ground and articulate both of these "Partnership" and "Participation" visions, distinct from both Stewardship and oneness-with-nature ethics. It should be noted in this context that, as the present survey and other empirical work (De Groot and Van den Born 2007; Van den Born 2008) has shown, lay people have a tendency to freely mix positions that may appear

[44] Naess, A. (1973). "The Shallow and the Deep, Long-Range Ecology Movement." Inquiry **16**: 95-100., p.11: "It is clear, though, that vast numbers of people of all countries, and even a considerable number of people in power, accept as valid the wider norms and values of the Deep Ecology movement." In a keynote lecture form 1985 ("Intrinsic Value: Will the Defenders of Nature Please Rise?", given at conference of International Society on Conservation Biology, University of Michigan, Ann Harbor, May 1985), Naess claimed to have conducted an empirical study on ordinary people's normative views on nature that confirms the results of our survey. According to Naess's, "a great majority" of interviewees reported feeling a moral obligation to the natural world, held that some natural entities other than human beings had "rights", and claimed that one could speak meaningfully about the inherent value of nature (cited in Howe, B. (2008). The History of Arne Naess's Environmental Philosophy and Its Reception. Leuven. Ph.D.).

[45] Howe argues that the statements in the deep ecology platform are meant to solely reflect shared articulations of fundamental ideas and convictions, not shared underlying concepts or ideologies. Thus Naess neither believed that such a shift was necessary, nor that philosophy could lead to such a paradigm-shift. (Cf. Howe, B. (2008). The History of Arne Naess's Environmental Philosophy and Its Reception. Leuven. Ph.D.)

incommensurable in more theoretical terms, e.g. to adhere to both Stewardship and Partnership, or both Partnership and Participation. Environmental ethics should of course not see this as an excuse to develop sloppy theory or excessively pragmatic pantheons, but articulations that allow for gliding scales and intermediate positions do have a high 'public utility'. If environmental ethics is to have a productive function in public moral debate, it should be common enough to help people articulate their moral beliefs and intuitions, and yet creative and analytically sharp enough to be able to lead to new critical insights into the meaning of these intuitions.

3 The role of institutions

Environmental ethicists tend to take an idealist position, assuming that societal processes are merely a reflection of underlying ideas and ideologies. Our survey shows that this assumption is untenable. The images and ideologies of individual people are not congruent at all with the current, very weak responses of societies to the environmental crisis. One line of thought that addresses this discrepancy remains on the level of individual people, indicating the well-known gap between attitude and behaviour, or weakness of will. This argument does hold water and we will pay some attention to it later. The first thing to be aware of, however, is the crucial role of *institutions* (organizations, rules, structures) in environmental issues. Individual people can chose to buy energy-saving lamps (if affordable), eat organic food (if available) or make the garden (if present) more natural, but beyond these, what can they really accomplish? From waste management to climate change alleviation, from pesticides to national parks, the environmental business that makes a real difference is institutional business.

Once we start looking at institutions, the picture that emerges is strikingly different from the picture emerging from ours and others' surveys of individual people. People's moral ideas may be green, but institutions often obstruct their attempts to lead their lives accordingly. Physical infrastructures force people into private cars; tax rules put a levy on labor in stead of pollution, institutions fail to lift farmers out of the rat race they find themselves in (Minteer 2008); even the incentive structures of the academic discipline of philosophy stimulate practicing philosophy in a way that is only relevant to fellow philosophers (Frodeman 2008). The programs of mainstream political parties usually reflect variations on the traditional idea that humans can be a Master over nature (De Groot 1992: 495). Campagna and Fernández (2007) looked at the mission statements of international environmental organizations, and Butler and Acott (2007) compared the acknowledgement of nature's intrinsic value in the policies versus the employees of landowning organizations in England, and both found the same answer: irrespective of what people -even the own employees- may think, institutions only reflect the economic utility of nature. Everyone appears to be caught in an *idée fixe* that other people are not nature-friendly and interested only in *homo economicus* arguments. The tapestry of our daily life is, to a large degree, woven by institutions and many of these fail to recognize and exploit the public basis for nature friendly institutional action. Yet many of them could do so very well. The concepts of intrinsic value and Stewardship could form a massive public basis for institutions to work on, once these

institutions would recognize the gap between their current mission statements and the environmental ethics of the public.

In the current situation, however, individuals can express their good intentions only in those few areas that they can control themselves. For individuals, effectively working for nature often amounts to struggling with institutions against the institutional grain, which requires strong motivation. It is doubtful, however, whether intrinsic value recognition and the notion of Stewardship can provide motivational power that is strong enough. John Nolt (2006) states that intrinsic value recognition (as any value recognition) *as such* does not yet motivate for action. The step from good to ought requires a feeling of connectedness with the valued object. In this context, it may be noted that Stewardship remains a relatively abstract, detached relationship with nature. There is something 'out there' that has value and for which 'we' are somehow 'responsible'. In motivational terms, however, this is still a far cry from a value to which I am really connected. The concepts of intrinsic value and Stewardship may be too weak for an individual to start working against the institutional grain.

4 A proposal for environmental ethics

It is outside our reach to give a systematic account of possible responses of environmental philosophy to this situation. One line of reasoning certainly would follow Frodeman's (2008) plea for environmental ethics to become more strongly embedded in institutions and interdisciplinary work. In largely the same vein, Andrew Light and others (Light and Katz 1996) have proposed to make a "political turn" in environmental ethics. Philosophers could help change the institutional rules and arrangements in ways that are more in tune with publicly held environmental values.

A second line of reasoning would focus more on the articulation of Visions of Nature that go beyond Stewardship and intrinsic value, to focus on issues of Partnership, connectedness and (bioregional) place attachment. This philosophical work should, to a high degree, be a public affair, developing close to the 'empirical philosophy' of what lay people really think, and well represented in the media and institutions where people meet. As one example, philosophers could play a special part in helping communities to articulate and promote their specific perspective in the public debate.

A third line of reasoning would be to develop a more hermeneutic style of doing environmental ethics, and it is on this proposal that we will focus below.

Hermeneutical ethics does not start with a reflection and articulation of abstract values that people (should) adhere to. Rather, it seeks to articulate the meanings that actually already play a role in environmental practices.

The type of moral ideas that people usually refer to, when asked about their views on how humans and nature should relate, should rather be called "good intentions", because they refer to their ideas about what a morally-ideal world would look like. The problem is that many of these ideas remain rather isolated, without an outlet in actual moral practices.

On another, more practical level, however, people's lives are embedded in morality. We live in a world that is always already interpreted and filled with meanings (moral and otherwise); our actions reflect that. That does not mean, however, that all these

meanings are already well-understood. It is here that environmental ethicists could play a role.

In a similar way as a psychotherapist can enlighten people about the deeper reasons why they do certain things, environmental ethicists could attempt to re-interpret environmental practices to show how certain moral meanings are at stake in environmental practices in ways that most people usually are not fully aware of, or that are ill-reflected in the way they go about certain practices. By asking the question what it means to be part of nature, environmental ethicists could try to reconnect the obvious concepts, such as responsibility, Stewardship and being-part of nature with our environmental practices of everyday life.

A hermeneutical approach to environmental ethics would try to articulate moral ideas by interpreting the meaning of practices, moral intuitions and experiences that are part of collectively shared notions and meanings. By articulating and explicating the moral meanings and intuitions that play a part in public life, hermeneutics can help strengthen the socio-cultural fabric that not only enables individuals to form their moral intuitions, but also helps them to live out these ideas in their practices. Instead of starting with abstract moral ideas, which are the result of often poorly understood theoretical discourses, a hermeneutical ethics aims to re-interpret the meanings that, to some degree, already structure our actual practices.

By re-articulating the original intuitions that people voiced in terms of the broad images of relationship that we clarified in our survey, ethicists can help reconnect these moral intuitions to environmental practices: what does it mean to see oneself as a Steward, or a Participant of nature? What would it mean in terms of driving a car, in terms of flying to one's holiday location? In doing so, hermeneutical environmental ethics could even help to cultivate and articulate an environmental virtue ethics. Virtue ethicists believe that moral behaviour does not amount to following abstract principles or recognizing rationally justified values, but rather that morality can be found *within* established practices, in which certain moral meanings play a part as the presupposed (but often unconscious) purpose of much of what we do (MacIntyre 1985). A *hermeneutical* approach to environmental virtue ethics would seek to reinterpret these practices in such a way that people become more aware of the sought-after meaning that motivates and structures these practices and know better what moral meanings are at stake in these environmental practices. Ethicists can thus help strengthen the socio-cultural frames that may counterweight the narrow utilitarian rationale that governs so many of our institutions.

Discussion

Discussion

After a decade of development the HaN-scale has now shown itself to be an effective and reliable instrument to measure the images of the human/ nature relationship. In combination with the interviews, this scale showed that lay people in the Western world adhere to Guardianship of nature instead of a Mastery over nature. The study in Canada suggested that the religious background of lay people connects with their environmental ethics. Concerning the practice of river management the results show that the public is not positive about dike reinforcements, but adheres to the 'Room for River' management style. According to the public, 'Room for River' management is based upon a Guardianship of nature ethic, while dike reinforcement is based upon a Mastery over nature ethic.

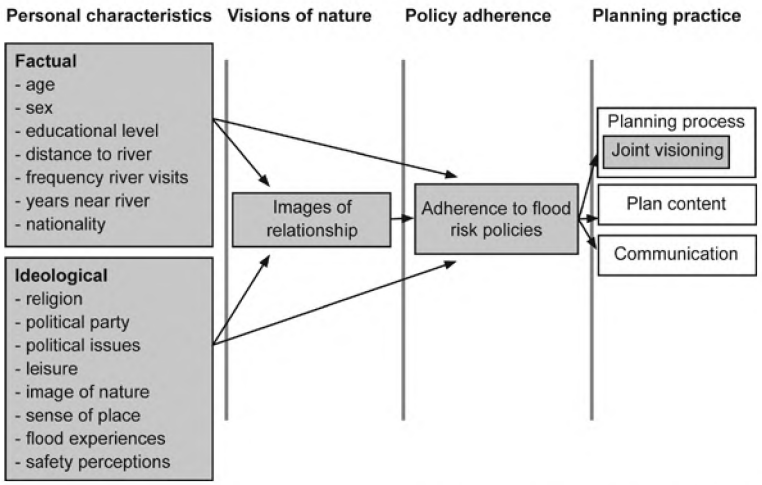
The public enthusiasm for Guardianship of nature as shown in this thesis demands that environmental philosophy and the social sciences be more open to pluralist ethics, which enhance middle ground values and human/ nature relationships such as Stewardship and Partnership. Second, both disciplines could benefit from an analytical approach that starts from (environmental) action and behaviour and scrutinises on what moral grounds these are built. Finally, the ecocentric ethics of the public give a social responsibility to the river manager to search for ways to incorporate ecocentric values in river management.

Introduction

Despite the large diversity, the previous chapters all share a focus on vision of nature of the Western public. The Visions of Nature, and in particular the image of the human/nature relationship, will therefore also be the central theme of this last chapter. As the research model of the introduction showed, this thesis investigated several themes that might appear to have interesting links with images of relationships; background variables (among which religion), policy adherence and the application of vision of nature in the practice of visioning. The first part of this chapter will give the most striking results concerning all grey boxes as presented in the figure and by so doing meet the first part of the objective:

'This study taps Western lay people's images of the human/nature relationship and connects these with background variables and adherences to flood protection policies...'

Figure 7.1 *Research model. The issues depicted in the grey boxes are the subject of study; the subjects in the white boxes are the more practical fields of water management that may benefit from the results.*



After these general conclusions this chapter will reflect upon the methods used by discussing its validity and reliability. The chapter will conclude with implications for theory and policy practice, or, as described in the second part of the objective: *'...to empirically test environmental ethics perspectives and to give recommendations on visioning and communication in river landscape planning.'*

General conclusions

Starting with the main focus of this thesis, the images of the human-nature relationship, two questions are important. *First, does the Western public distinguish the same images of human-nature relationship as philosophers do?* That is, do they distinguish between

Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature? The second question *tests Lynn White's hypothesis that Western man has the world view of Mastery over nature,* by tapping the respondent's favourite image of relationship. I will elaborate on the first question before testing the hypothesis.

Human-nature relationships distinguished

Starting with the image of *Mastery* over nature, the results of both interviews and surveys confirm the earlier findings of Van den Born (see for instance: 2006) who showed that the public did not encounter any difficulty in distinguishing the image of Mastery. During all interviews the respondents easily understood and anticipated the description of Mastery, by giving many examples of human dominion that they come across in daily life. The factor analyses of the surveys grouped the Mastery items in one factor which means that it can easily be distinguished. The statements on instrumental value always correlated most with the Master statements, which stresses the anthropocentric stance of Mastery.

When moving towards the next image, *Stewardship* of nature, the story is not as straightforward. At the time I conducted the interviews among religious respondents in Canada, two out of three surveys of our research group (Van den Born et al. 2001; De Groot and Van den Born 2003) had suggested that the respondents did not distinguish Stewardship in the traditional manner. The respondents did not place the Steward above nature, but they distinguished a Steward *in* nature, thus as being part of it. Although this had been attributed to operationalisation problems, the small scale survey in Canada again resulted in a factor analysis that grouped responsibility and 'part of nature' items together. The Canadian in-depth interviews then confirmed that the hierarchy between humans and nature inherent in the traditional image of Stewardship did not appear logical to the public. The interviews showed that even the respondents who selected Stewardship as their most favourite image (Muslims and Christians) wanted to adjust it into a Steward *in* nature.

In this discovery the use of qualitative methods was crucial; they complemented and explained the previous survey results. Further interviews and surveys in the Netherlands (Chapter 3 & Van den Born 2008) and in North Western Europe (Chapters 5 & 6) suggest that the image of Stewardship in nature is rather universal in the western world. Especially the international survey gave a solid confirmation; the item 'Human beings are part of nature and also responsible for it' correlated with other Stewardship statements, while the traditional Stewardship item 'although we stand above nature, we do need to take good care of it' correlated with Mastery.

The surveys gave another indication that the public has a somewhat ecocentric interpretation of Stewardship than traditionally thought. The Stewardship factor cohered with statements on the intrinsic value of nature (Chapter 3, 6) or correlated negatively with statements on instrumental values (Chapter 2). This indicates that the respondents regard the intrinsic value of nature and not instrumental value in line with a Stewardship ethic. To distinguish the empirical Steward from the traditional one and to express the rejection of hierarchy and the acceptance of intrinsic value, we called it *Guardianship* of nature. This is roughly based upon the classification of De Groot (1992) who distinguished between the caretaker, who regards nature as a resource that should

be handled with care, and the Guardian, who recognizes the intrinsic value and the integrity of nature.

Thirdly, Partnership with nature is the most difficult image to distinguish for the respondents. After Van den Born (2006) showed that the public recognizes a romantic and an active Partner, we developed statements that more directly articulated the Partnership idea, using words like 'friendship' and 'development'. Yet, the analysis of the Dutch survey showed a mix of Partner and Participant statements in one factor. For the international survey we developed more statements that were less dreamy and vague which worked very well; the analysis showed a clear Partnership factor that resembles the theoretical one. Despite this success, the Partner statements are still among the first that correlate with other images like Stewardship or Participation. The interviews also confirmed that the respondents encountered difficulties understanding the implications of a Partnership ethic. These difficulties can easily be explained. In contrast to the other images, Partnership is a less articulated way of looking at the world. For the respondents Mastery and Stewardship are part of daily life and form an important component of western tradition and Participation is easily recognized by many in the lives of indigenous people. Partnership, however, is something most interviewees have never heard about; mostly their (non)verbal reaction shows that they do not recognize the concept. The unfamiliarity with the Partner ethic also put higher demands on the survey items, because they have to represent the basics of the image very clearly in order to prevent misinterpretation.

Finally, *Participation* in nature is easier to distinguish as a coherent concept. Nevertheless, apart from the Buddhists and Native Americans, most interviewees did not understand the questions on spiritual experiences in nature. The vagueness and unfamiliarity with this topic might also explain why the statement on spiritual experiences primarily clustered with other dreamy items in the survey of Chapter 3. Next to this spiritual component, the Participant also regards himself as part of nature in a psychological sense; the relation with nature constitutes his/her identity. Although the interviews (chapter 2,3 & Van den Born 2008) show that the public easily interprets this being part of nature as merely biological, the later surveys (Chapters 3,5,6) showed that the public certainly considers this psychological component in line with Participation. Statements on 'intense connectedness to nature' and even on 'oneness with the universe' were grouped in the Participant factor. I will go deeper into this in the next section.

This short overview shows that the results of the interviews and the surveys have become very consistent over the last couple of years and form a solid basis for further empirical and philosophical studies. Although most of this basis was formed in a Dutch context, the studies in Canada and North-Western Europe show similar outcomes and suggest that previous Dutch findings are likely to reflect the images distinguished in a larger part of the Western world and possibly beyond.

Adherences to human/nature relationships

After the previous section made clear which human-nature relationships the public distinguishes, it is now possible to test Lynn White's hypothesis that Western man is Master over nature. After Dutch surveys (De Groot and Van den Born 2003; Van den

Born 2006) already showed that the public rejects Mastery over nature and embraces Stewardship, the qualitative methods used in Canada and the Netherlands confirmed this finding. Both the Canadian and the Dutch interviewees adhered most to Stewardship *in* nature (Guardianship) and Participation in nature. Because both images regard humans as part of nature, the most important reason to choose for Stewardship is because the idea of responsibility appeals to them. Mastery is spoken of very negatively and meeting an interviewee that adheres to it is exceptional. Partnership is usually received expectantly because it is unknown to the respondent, but is then often rejected later, e.g. because it does not seem workable. All survey results of this thesis are in line with previous Dutch studies (De Groot and Van den Born 2003; Van den Born 2006), indicating again that the Dutch findings mirror the ethics in wider Western Europe.
The results confirm the rejection of Mastery and the overwhelming popularity of Stewardship in nature. After Stewardship the respondents most adhere to Partnership, followed by Participation.
Note the difference between the outcomes of the interviews and the surveys concerning Partnership and Participation. When starting with Partnership, we see that this image is second most popular in the surveys while it is hardly adhered to in the interviews.
This is probably due to the different responses both methods evoke. The surveys collect quick responses, while the interviews give more room to think through the implications of an image. The interviews showed that especially in the case of Partnership, the first reaction is very different from the last. Although the idea of friendship with nature sounds appealing in first instance, deeper consideration leads the respondents to reject the image based upon practicalities like the difficulties involved in communication with nature. This is partly due to the name of the relationship: 'Partnership' is a rather strong term that raises expectations that result from experiences with inter-human relationships. They cannot imagine how these expectations can become reality in their relationship with nature. Because they do not know how it would work in practice they reject it. Obviously this cognitive process in which the respondents think through the implications of the concept does not take place in the survey and therefore practicalities do not form an objection there. Even when the Partnership factor includes a practical statement such as; *'I* can *have a relationship with nature just like I have with my friends'*, it is still very much adhered to.
Concerning Participation, the minor adherence to Participation in the survey and its high popularity in the interviews can be explained by the application of different analyses. The survey respondents can adhere to more than one image, while the interviewees have to choose one. In order to avoid very restricted choices in the interviews, the interviewees were allowed to combine images in order to make a 'best fit'. Because many adapt the images in their search for their ideal ethic, the phase in which they distinguish and the phase in which they adhere merge, while in the analysis of the survey these are two strictly separate processes. Presumably, this is what causes the difference in survey and interview results regarding Participation. Most interviewees do not enjoy spiritual experiences in nature nor feel intensely connected to it. Although they recognize it as a coherent concept, they directly drop the vagueness and move towards a more biological variant of being part of nature. Many remark that spiritual and truly connected Participation is an ethic that does not work in modern society,

because we are too far removed from nature. Yet, the Participation image as distinguished in the survey includes these elements and is thus less adhered to.
The mean score on Participation in the international survey (M= 0.40 on a scale between -2 and 2) is comparable with the mean score of community members in the US on the CNS-scale (M= 3.65 on a scale of 1 to 5) Mayer and Frantz. The Buddhists and Native Americans in the Canadian interviews are good examples of the few that do embrace Participation in nature in its full meaning. They did not change the image and try to keep a spiritual and psychological bond with nature even while living in a modern society.
Thus, an important reason to adhere to Participation and Guardianship *in* nature is because the respondents regard humans, at least biologically, as a part of nature.
That this conviction leads to many inconsistencies became apparent while discussing images of nature in the interviews. Most respondents regard nature as something that is free from human interference; it is untouched and pristine. This image of nature creates a large gap between humans and nature which is difficult to bridge. As Van den Born (2007) noted philosophers solve this problem by regarding humans as a biological entity that is part of nature on one side and a moral being that is outside nature on the other. Yet, most respondents solve this problem by holding two images of nature at the same time. One is the pristine untouched nature and the other is the nature that humans take part in. These two are mutually exclusive but the respondents seem to pick one of them dependent on the context, which means that they keep switching between them during the interview. [46]
The combination of large adherences to (biological) Participation and Guardianship of nature on one hand and the image of nature as untouched on the other, suggests that the respondents have a very static image of nature and our relation with it. For many, pristine nature is an ideal and remains a reference point even in the cultivated landscape of Western Europe. The images of Participation and Guardianship are both rather conservative when compared with the more intervening and active stance on nature of both Mastery and Partnership. Many respondents reject an active involvement in nature and remark that nature should be left alone. Although this conserving reaction is logical in a time where interventions in nature are mostly large, quick and often destructive, a more active Partnership relation would very well suit in a landscape that is (whether we like it or not) subject to change due to the large population that depends on it. Yet, to the respondent, it appears to be unclear how an active involvement with nature can take shape in an ecocentric manner, which restrains them from adopting this ethic.

Background variables

The personal characteristic that received most attention in this thesis is religion.
The interviews in Canada showed a strong relation between religion and images of nature and images of human-nature relationships. Almost all Protestants and Muslims considered nature as a gift from God and adhered most to Stewardship in nature, while all Buddhists and Natives regarded nature as spiritual and adhered most to Participation

[46] Although this might also happen while completing the questionnaire, I would argue that in general they will stick to the human exclusive image in that context. Firstly, because this is the first association respondents generally have and secondly the formulation of the statements invites the respondents to think of humans and nature as two separate entities, because they are referred to separately. For instance the statement 'people and nature are of equal value' suggests that nature does not include humans.

in nature. The Dutch survey of Chapter 3 also shows a correlation between religion and an image of human-nature relationship. It shows that respondents who regard themselves religious (mostly Christian), are not as negative about Mastery as secular respondents. This leaves the door open to the thesis that Christianity induces a dominating stance on nature.
The same regression analysis of Chapter 3 also shows other interesting links between background variables and images of relationship. It confirms earlier Dutch findings (Van den Born 2007) that men's responses to Mastery are relatively mild; they are not as negative as women are. In accordance to the expectations, the analysis shows that a respondent is significantly more negative about Mastery when he/she votes a left wing green party, considers nature conservation an important political issue and adheres to the idea that nature should be wild and spontaneous. Generally these three characteristics correlate positively with more ecocentric images of relationship, ranging from Guardianship to Participation.

Policy adherence

The two large scale surveys explored whether the images of human-nature relationships predict opinions on flood protection measures. The Dutch survey (Chapter 3) showed that respondents are slightly positive about side channel building, but negative about other *Room for River* measures such as dike relocation and the removal of trees.
The respondents especially considered the removal of trees as ugly and unnatural. Traditional dike reinforcement was also not regarded beautiful or natural but it was perceived as the safest of all. The international survey (Chapter 5) showed that the North-Western European respondents were very positive about the sustainable river management style of river widening and very negative about dike reinforcement. Although many responses have been biased because the word 'danger' was used in the questionnaire, it is in line with previous Dutch studies (Intomart 2008). Note the difference between the enthusiasm for the sustainable river management style and the overall negative responses on specific Room for River measures, such as the removal of trees and dike relocation. This difference can be explained as follows: the opinions on the specific measures were tapped among residents living near the floodplain where *Room for River* measures were about to take place. This makes it more concrete and so did the visualization of these measures in the questionnaire. On the contrary, the adherences to the sustainable management style were tapped based upon a much more general description in which the removal of trees was not mentioned and neither was it visualised or about to take place in a nearby floodplain. This made it easier to respond positively.
Upon considering the link between human-nature relationships and adherences to management styles, especially Mastery over nature and Guardian in nature have predictive power. Participation neither correlates with the specific measures nor with the management styles, while Partnership only negatively correlates with dike reinforcement. Mastery correlates positively with the adherence to dike reinforcement in the international survey, while Guardianship influences adherence to the sustainable management option. Yet, the Dutch study shows that the specific Room for River measure of removing trees is never considered as caring because it negatively correlates

with the Guardian in nature. Thus the respondents do not automatically associate all specific *Room for River* measures with Guardianship. Both regression analyses (Chapters 3, 6) show that images of nature (wildness, pure or cultivated nature) are good predictors for opinions on the removal of trees and dike reinforcement. This is a confirmation of Buijs (2008) who shows that both the images of nature and of human/nature relationships can be recognized in viewpoints on conservation policies. He found that images of nature have a more direct link to policy compared to normative considerations.

Policy process; visioning

The visioning experiments explored how values and visions can be incorporated in the first stage of a participatory planning process. Chapter 4 showed that both experts and civilians were very well able to express their Visions of Nature based upon the methods provided. They shared their dream images of the area and used this information to arrive at a shared spatial plan. Via these dream images the participants presented their image of nature and specified what landscape elements are valuable to them. In the Beuningen experiment the mutual learning and sharing of dream images changed the participants' opinion about the specific Room for River measures. The now informed civilians were less opposed to the removal of trees, because they acknowledged that the trees cause a safety problem because they hinder a panorama on the river and possibly the civilians were also more aware that removal can be natural. Their enthusiasm for side channels was still as lively as in the beginning and thus stayed in line with the outcomes of the survey in Beuningen.

Methodological reflections

This section will discuss the reliability and the validity of the methods used. Most emphasis will be on the validity of the HaN-scale, because the further development of this scale towards an universal instrument was an important methodological goal of this thesis.

Construct validity

The central question of this section is whether and how precisely the scale measures what it is supposed to measure; the theoretical classification of human/nature relationships. To answer this question, I will first discuss to what extent the content of the survey represents the images of human nature relationships. Then I will discuss the scale's *internal structure* (dimensionality) and its *correlation* with other variables like background variables.

Starting with the *content*, the HaN-scale would have high content validity if it covered all facets of the images of human-nature relationships and when these facets are well represented in the statements (Stouthard 1998). Especially in the quantitative methods it is important to ensure that all facets are covered, because the respondents do not get the opportunity to give their opinion apart from the questions asked. To ensure that all facets were taken up in the HaN-scale, the final selection of the statements was a joint

process of three researchers who were all much acquainted with the theoretical classifications. This led to the inclusion of facets that were not taken up in the 2000 version of the HaN-scale (Van den Born 2006) such as 'spiritual experiences' and 'connectedness' in the Participation image.

Another strategy to check whether all facets are taken up in the test is to use a different study that measures the same thing (Stouthard 1998). In our case the qualitative interviews can fulfil this role. Although the respondents are not acquainted with the theory, the semi structured character of the interviews gives them the opportunity to associate freely within the topic and to come up with facets the researchers did not (yet) include in the scale. For instance, we included statements such as *"Because I can think, I am more important than nature"* and *"it is because we treat nature poorly that there are more and more disasters"*, because many interviewees (Chapters 2 and 3) elaborated on these issues. Another interesting study to mention in this regard is the Visions of Nature survey carried out in Poland. Hunka et al. (2009) added some new facets to the 2000 HaN-scale, such as 'nature as home' and references to God. Despite these new facets the results showed much similarity with the 2000 and 2008 HaN-scale study (Hunka et al. submitted). This indicates that the facets that were represented in all three studies capture the core of the images or at least largely direct the manner in which the respondents distinguish and adhere to the images.

Beside these attempts to capture all facets of the theory, the statements also have to be clear and good representations of these facets. Especially in the case of empirical philosophy this is a difficult task, because the philosophical ideas are mostly abstract and difficult to capture in a short and clear statement. In order to gain more insight in the way lay people interpret the statements of the 2008 HaN-scale and to check the translations, we conducted approximately 15 semi-structured interviews in each country; France, Germany and the Netherlands. The results led to the exclusion of some statements from the scale. For instance, the French did not subscribe to the antithesis in *"Nature cannot be allowed to stand in the way of economic progress"* and especially the German respondents regarded *"Nature evokes spiritual experiences in me"* as religious, and therefore more in accordance with Stewardship than with Participation. In other cases the translation changed or the content of the statement; for instance 'a month in the forest' changed into a week; *"I would like to spend a week entirely alone in the forest in order to feel one with nature"*.

Besides these special validation interviews, the general Visions of Nature interviews (chapter 2,3 and Van den Born 2008) also provide more insight in the validity of some statements. This is especially the case with intrinsic value. The interviews show that only a few respondents interpret intrinsic value in accordance with the concept as thought through by philosophers. Therefore we cannot interpret these results as if the respondents have a (full) understanding of the concept and its implications, but it does measure their primal intuition that it is the right way to value nature. The statement on intrinsic value that was part of the 2008 HaN-scale should therefore be interpreted this way. Such an initial positive reaction indicates a fertile ground to further introduce the concept in society and to explore its correlations with the images of relationship.

The high scores on intrinsic value items are probably also influenced by social desirability. The respondents probably find it desirable to agree upon this statement

from a social point of view and will tend to distort their response in a favourable direction. Because the goal of the HaN-scale is to measure judgments on right or wrong, it will evoke socially desirable responses. The impact of social desirability becomes problematic when the absolute levels of response are reported, like the percentage of respondents that agree with the intrinsic value statement. Obviously the response levels rise due to social desirability and in the interpretations of the results this should be taken into account. Yet, when we look more closely into the mechanism behind the desirable responses we see cultural rules on right or wrong at work. This implies that social desirability is subject to the same moral rules as the images of human/nature relationships. They are both individual expressions of the visions and values concerning nature that prevail in the respondents' culture. Both social desirability and the images of relationship develop in a cultural context to which the respondent more or less wants to conform (see also: Hunka et al. submitted). The most important difference between the two is that the images of relationships are internalized while social desirability is a trait. Social desirability might therefore function as a multiplier on the responses, but does not deform the results relative to one another.

In a different application of the term, social desirability is not regarded as a property of the scale but of the respondent. If some respondents are more affected by social desirability than others it would harm the validity of analyses that compare between respondents, like regression analyses. A comparative analysis might for instance show that two respondents have a high adherence to Guardianship in nature. However, in reality, one has a high adherence while the other has a moderate adherence but has a trait to give a response that is more in accordance with the cultural norm. It is possible to detect this last respondent with for instance the Marlowe-Crowne SD scale or the Eysenck Personality Inventory Lie Scale. Based upon the study by McCrae and Costa (1983) we decided not to use these scales because they also tend to select respondents who are better adjusted, friendlier and more open to experiences.

The second characteristic that determines the construct validity of the HaN-scale is the internal *structure*. In contrast to the New Ecological Paradigm scale (NEP; Dunlap et al. 2000) and the Connectedness to Nature Scale (CNS; Mayer and Frantz 2004), the HaN-scale is designed as a multi-dimensional instrument. To test whether the four dimensions are well represented in the scale, all HaN-scale analyses of our research group started with a number of explorative factor analyses ranging from two to five or six groups. Mostly the factor analysis into four groups was selected, based upon the scree plot and Kaiser's rule of thumb of dropping every factor of eigenvalue lower than one. The validity of the internal structure was strongest with the Mastery and Stewardship/Guardianship of nature statements and weakest with Partnership and Participation items because the latter two sometimes combined to form one factor. This was probably due to the dreamy character of both. The inclusion of more concrete statements for both Partnership and Participation in the HaN-scale 2008 appears to have solved this validity problem.

A last point to determine the construct validity is based upon expected *correlations* between the HaN-scale and other variables, such as background variables. It can be hypothesized that women are more negative about Mastery over nature than men, and that GreenLeft voters adhere relatively more to Participation. Since the regression

analysis of Chapter 3 shows both expectations are true, this contributes to the construct validity of the scale. A different way to reach the same judgments is to study two population groups that are expected to respond differently on the scale. This is in fact what the Canadian interviews (Chapter 2) did. Native Americans can be expected to adhere more to the image of Participation in nature while the Western (Christian) population is expected to adhere more to Stewardship. The interviews confirmed these expectations and showed that the HaN-scale possesses known group validity. Since this is based upon only 10 interviews, I would recommend more studies among different groups in the population that can be expected to score higher or lower on one of the images of human-nature relationships, e.g. farmers versus urbanites or environmental students versus business students. Another interesting path yet to explore are the interrelationships between the HaN-scale, CNS and NEP. Although small samples among university students have already started, I would recommend collecting more empirical data to test whether the HaN-scale indeed, as we claim in Chapter 6, overarches both CNS and NEP.

Predictive and external validity

This thesis also investigated whether the HaN-scale can be used to predict other variables, in this case adherence to Room for River policies. The regression analyses of Chapters 3 and 5 show that especially the more anthropocentric images (Mastery and Guardianship) explain the opinions on these policies which suggests that these subscales posses predictive validity. Yet, in case of the international survey these conclusions have to be handled with care, especially because the responses to the two policy lines (Room for River and dike reinforcement) might have been biased due to the word 'danger' in the description of the policy line. In order to create a more solid basis to judge the predictive validity of the scale I would recommend further studies on the link between HaN and for instance environmentally friendly behaviour or opinions on nature conservation. Indications that also the ecocentric images may show predictive power can be found in the significant correlations between environmental behaviour and Thompson and Barton's ecocentric scale (1994) or Mayer and Frantz' Connectedness to Nature Scale (2004).

Finally, concerning the external validity, in the Netherlands the results can be generalized to the population at large. This is due to the resemblance between the samples and the population at large in terms of sex, age and educational level and because the outcomes of the later studies confirm previous findings to a large extent. Nevertheless, a survey on nature easily creates a biased sample because 'nature lovers' are more inclined to cooperate. In the case of the 'river surveys' of this thesis the same mechanism works for respondents that like the river. The study of Van den Born (2006) forms a good reference point in this regard. Because this study was taken up in a large survey including many other topics like conservatism and politics, it is unlikely that 'nature lovers' are overrepresented in this sample. Since the outcomes presented in this thesis are in line with this previous study (Hunka et al. submitted), the bias towards people who like nature and the river is expected to be small. The similar outcomes between these studies also imply that riverside residents represent the general population well. Following the same line of thought, the French and German results

(Chapters 5 and 6), are likely to have a minimal bias towards 'nature lovers' and are expected to be in line with the population at large. Yet, to contribute to a more valid generalization towards the French and German population at large, I would recommend further studies on the HaN-scale in these countries. In order to test to what extent the HaN scale results are similar among different cultures and nationalities further studies can be done in new areas such as Latin American countries or Asia. At the same time these undertakings can test the applicability of the scale throughout the world.
In conclusion, the use of a mixed method approach has given more insight in the validity of the HaN-scale and contributed to a better construct validity. Further studies on the HaN-scale should especially focus on the contribution to known-group validity and predictive validity and more studies outside the Netherlands are required to increase the external validity. The reliability of the large surveys is acceptable when taking into consideration the small number of items per factor. Chapters 2 and 5 show Cronbach's alphas ranging from 0.66 to 0.83 of which the highest reliabilities are for the Guardian in nature in both studies. Since an alpha of 0.66 is rather small, especially when this factor is entered into a regression analysis, I would recommend increasing the number of items of the HaN-scale in order to improve reliability in future studies. Finally, future studies based upon the HaN-scale could lay more emphasis on the interrelationships between the images based upon factor analyses with promax rotation.

Implications for theory and practice

This section will first highlight the implications the results have on environmental philosophy and on social sciences, followed by recommendations for the practice of planning and communication in river management.

Theory

As the most important theory underlying this thesis, I will first describe the implications the results have for the classification of human/nature relationships. In general the respondents distinguish the images of human/nature relationships in accordance to the classification of philosophers. An important exception is Stewardship. The public distinguishes a Stewardship *in* nature instead of the traditional Steward who is positioned above nature. In order to adapt the theory more to the visions of the public, the traditional Stewardship should therefore be replaced by a Stewardship in nature which we would recommend labelling "Guardian of nature". This adaptation of the theory is especially important because Guardianship is by far the most popular ethic of the public. Provided this change is made, the classification of human/nature relationships is a very applicable framework to empirically investigate environmental ethics. Its merit in relation to other social scientific scales and environmental ethical projects is the emphasis on ethics that form a middle ground between (extreme) anthropocentrism and ecocentrism. Guardianship and Partnership are images that have largely been overlooked in both philosophy and social sciences, which is a significant deficit considering the large public adherences to them.

In line with Minteer (2008), I would argue that environmental ethicists should expand their focus beyond the set of beliefs that have dominated the field until today, such as the tendency to think in moral dualisms, the embracement of non-anthropocentrism and the preference for pristine and wild nature. By creating a sharp dualism between instrumental and intrinsic values many ethicists do not investigate a more pluralistic theory of values in which both ends meet. Instead they tend to reject anthropocentrism in order to focus mainly on ecocentrism, the concept of intrinsic value and the preservation of wilderness. These beliefs show some parallels with the public visions as presented in this thesis, such as the preference for pristine nature, the desire to leave these areas alone and their positive stance on intrinsic value. Nevertheless, the public does not choose en masse for strong ecocentrism as represented by Participation in nature, but distinguishes a more pluralistic ethic that only received attention from some philosophers (Passmore 1974; Norton 1991; Minteer and Manning 1999). Moreover, this thesis also shows that the public not only distinguishes one but two forms of ecocentrism. While the image of Participation in nature very much resembles the ecocentrism often ventilated by environmental ethicists, the public also distinguishes the more active ethic of Partnership.

Both the adherence to middle ground ethics and the two forms of ecocentricity are rarely subject of ethical debates. Nevertheless the debate could benefit from a more thorough examination of pluralistic ethics especially when it concerns densely populated areas in the world. For instance in Europe, where the last patches of wilderness can only be found by those who are intensively searching for them, ecocentric ethics of wilderness preservation as disseminated by many environmental ethicists are not very applicable. Although the public combines a rather static image of nature with a conservative stance on nature, the intensive use of the environment in this part of the world necessitates a more active ethic on how to intervene with agrarian landscapes, urban spaces and nature development areas in an ecocentric way. Partnership could function as the basis for this new ethic, due to its active and ecocentric character. Yet, since the practical implications of the Partnership are not obvious to the public, this ethic should be more articulated in both environmental ethics and society. The other disadvantage of Partnership is that it does not have commonly known roots in mainstream Western culture, which makes it difficult to obtain a firm footing in society. In order to overcome this problem Stewardship could be the starting point for this new active ethic that does not let us feel guilty when we intervene in nature and provides an ecocentric alternative for our interventions in nature. As the experts in this field, ethicists are the obvious authority to scrutinize the moral dilemmas that living in a cultivated landscape creates and to articulate a vision for nature conservation outside wilderness areas.

The large adherence to Stewardship as presented in this thesis also has its consequences for social sciences. Especially when conducting studies on Ibrahimic religions and human-nature relationships, the inclusion of a Stewardship ethic is crucial to understand the links between religion and environmental ethics. Mostly the NEP-scale is used to measure ecological world views, but this scale does not give a full representation of Stewardship. This is due to the somewhat different focus of the scale

that measures environmental awareness rather than human-nature relationships. The only human-nature relationship the NEP represents is anti-anthropocentrism. This facet is not a clear environmental ethic, but rather reflects the origin of the scale as an instrument to measure a counter movement. The NEP was developed to measure the (minority) voices that protest against dominant beliefs such as individualism, free enterprise, growth and prosperity. From this point of view the facet of anti-anthropocentrism is logical, because it expresses the resistance against the dominant paradigm. Yet, three decades after the publication of the first NEP-scale environmental awareness and ecocentrism has turned into mainstream thought and can no longer be regarded as a counter movement. Therefore, it is more interesting to differentiate between different forms of ecocentrism than to measure the degree of anti-anthropocentrism. The inclusion of alternative ethics in the studies will give respondents the opportunity to express in more detail what kind of ethic they adhere to instead of just showing their (dis)agreement with anthropocentrism.

This is especially important because the factor and regression analyses in Chapters 3 and 5 showed that disagreeing with anthropocentrism is not the same as agreeing with ecocentrism. The statements on Participation and Partnership do not negatively correlate with items on Mastery over nature, which implies that the ecocentric images have a different character that cannot be compared to anti-anthropocentrism.

The regression analyses confirm this different character because the image of Mastery shows different correlations with background variables and policy from Partnership and Participation. A similar confirmation can be found in the regression analyses of Thompson and Barton (1994) in which adherence to ecocentrism shows correlations with for instance conserving behaviours while adherence to anthropocentrism does not. Empirical studies into ecological world views could therefore profit from the incorporation of ecocentric world views. Although the ecocentrism/anthropocentrism scale (Thompson and Barton 1994) and the CNS (Mayer and Frantz 2004) are good examples of scales that already measure these beliefs, I would recommend measuring the whole spectrum from anthropocentrism, via Stewardship to Partnership and Participation. After a decade of development, the HaN-scale has proved to be a useful and multi dimensional instrument to study a broad range of human-nature relationships.

This thesis shows that both environmental ethics and social sciences can benefit from studies into empirical philosophy. Social scientists can profit from the conceptually well-developed environmental ethics of philosophers while the ethicists could further build upon the empirical outcomes. Although still a small niche, the number of scientists that combine both disciplines seems to be growing alongside the call for more pluralist or pragmatic environmental ethics.

Practice

This section will describe the implications the conclusions have for the content and practice of river landscape planning and communication and will end with a discussion on new ways to study Visions of Nature.

Starting with the public opinion on Room for River policies we see that the adherence to

the Room for River policy line is large in North Western Europe, while dike reinforcement was generally rejected. Although this looks like an unconditional support for Room for River measures, Chapters 3 and 5 show that responses on specific Room for River measures, such as dike relocation, a spillway and especially the removal of trees, are negative. Obviously, support for the general policy line does not automatically lead to enthusiasm about specific measures. This is an important finding for practitioners in river landscape planning. Their 'new' way of management can generally count on large support, but once it is suggested using specific measures the public support might vanish. Let us take the example of the most difficult measure to accept for the public; the removal of trees. To water managers it is very clear that the removal of trees will create more room and under the heading of 'cyclic rejuvenation' it can be explained as a very natural thing to do because wild rivers also uproot and drag along trees during extremely high water levels. Nevertheless, they will have to understand the hesitation of the public. Apart from the negative association logging often evokes, this specific measure is even more difficult to grasp for the public because the forested areas in the Dutch floodplains have increased rapidly due to nature development projects over the last decades. It is difficult to understand that these same trees, standing in a newly created natural area, suddenly have to be removed for safety reasons. In the communication towards local residents and stakeholders a thorough explanation of the rationale behind these plans should get major attention. The public needs to know why all of a sudden the removal of trees or the construction of a side channel is necessary in a newly developed nature area and on how this links up with the Room for River policies. These insights are essential for the public to understand the necessity and the choice for the specific measures. It might also drive the public to perceive the measure in a new light and to associate it with their positive stance towards the Room for River policy.

Another result that has implications for the practice of river management is the link between environmental ethics and flood risk policies. The regression analyses of Chapter 5 showed that fierce rejections of dike reinforcement correlate with the rejection of Mastery, while support for Room for River correlates with high adherences to Guardianship. This suggests that the public recognizes Room for River as a more responsible way to treat nature than dike reinforcement. Thus according to the public, the shift in policy from dike reinforcement to Room for River is based upon a more caring ethic. This result falls in line with the thesis of many Dutch scholars (De Groot 1987; Van der Brugge et al. 2005; Van Heezik 2007) who state that the shift from dike reinforcement to the sustainable style is a fundamental one, because it is based upon different core values. Since this thesis has shown that the public has moved beyond Mastery over nature, we can conclude that dike reinforcement does not represent the ethics of the public while Room for River policies connect very well to an image of human/nature relationships that prevail in society. Since the more ecocentric images of relationship like Partnership and Participation are also popular among the population, water managers in North-Western Europe carry social responsibility to search for ways to incorporate more ecocentric values in policy. A more ecocentric approach to river management is based upon the dynamics and the ecology of the river; it creates room

for both nature and the river to go its course. This would result into wilder nature areas, more silence and less human pressure. Human interference is possible in a more creative and adaptive way that respects the development of both humans and nature.
An example is to further relocate dikes land inwards and to truly live together with the water outside the dikes, where houses and industries can be built on poles, on hills or floating.
In short, to even better connect flood protection policies with the visions of the public, I have two recommendations: (1) to emphasize the rationale behind specific Room for River measures in the communication towards the public and (2) to base new ways of water management no longer on (strong) anthropocentric ethics.
Both recommendations can be applied in all kinds of policy processes running from top-down to more bottom-up approaches. Nevertheless, I would argue that they will be most effective when civilians are included in the planning process. Concerning the communication towards the public, Chapter 4 showed that visioning sessions between experts and civilians are a good setting to explain and discuss all possible measures. Both civilians and experts were open to new opinions and knowledge and were very cooperative because all carried the responsibility of making the project a success. Returning to the example of the removal of trees, we see that most participating civilians were not charmed by this measure during the first visioning sessions in Beuningen. Nevertheless, this reluctance soon changed into support after a dialogue took place between the experts and the civilians. The experts had the opportunity to inform the civilians on the rationale behind it, while the civilians could show their concern for the forest. This open discussion led to the acceptance of the civilians for the removal of some trees because it would also reconnect leisure seekers on the dike visually with the river, because of the panorama. Naturally, it is more difficult to communicate with the participants in a situation where sour grapes characterise the issues at stake. Yet, the experiment in Arnemuiden showed that even in these situations mutual learning and shared visioning with the public can form a good basis to create trust and understanding and can show a way out of the deadlock.
Regarding the second recommendation, public Participation in an early phase of the planning process makes it possible to directly plug into the civilians' opinion on the measures and their Visions of Nature. Chapter 4 showed that in addition to the ecological and technical perspective of the experts, the civilians expressed a more affective approach. They spoke based upon personal experiences, showing the different character of their relationship with the area. Yet, in order to connect flood risk policies to the values and images of the public, it is necessary to make the visions more explicit, because otherwise most viewpoints expressed during the visioning process do not clearly show these deeper hidden approaches. At this point planners could benefit from the knowledge and methods on studying values and images that are present in social sciences. Based upon a variety of methods the participants can become aware of their own values and images and refer to them in the discussions. Especially the early stages of planning can benefit from the transparency on ethics and objectives that result from such an approach. To my knowledge only Keeney (1996) scrutinises values in order to incorporate these into a planning process. I would therefore recommend that planners

take advantage of the knowledge on tapping values that is present in the social sciences and to use these approaches to reveal beliefs and objectives of Participants.
This thesis has a few more implications for both theory and practice that follow from a more distant view of the results. These very broad implications will be discussed in the next, and final, section

The role of environmental ethics in theory and practice

Within philosophy two approaches can be distinguished, one aims at the articulation and grounding of new ideas, and the other one aims at the analysis (or 'deconstruction') of existing notions or practices. Visions of Nature studies are of the articulating kind. It looks at how laypersons articulate their ethics, and compares these with how philosophers do it. Typical results or this approach are; 1) ideas on congruence and difference in articulations (e.g. the striking difference between Stewardship of nature as traditionally known and the public image of Guardianship of nature), 2) information on distribution of adherence (e.g. most lay people do adhere to Guardianship of nature instead of Mastery over nature).
One role of this articulating approach is to improve environmental philosophy. The comparison between philosophical articulations and those of the public may for instance show which issues get minor attention in philosophy while being a core issue to the public. The articulating approach can also create awareness in public and politics. The recognition that public values lean towards ecocentrism, gives support for policy or planning designs that are more in balance with nature and express more consciousness of our surroundings. Besides, the articulation of public values contributes to understanding between experts and civilians for instance during participatory processes.
This usefulness, though significant, is limited at the same time. This especially relates to the distinction between culture and action. Culture on the one hand refers to articulation, world views and adherence to management styles or policies, while on the other hand action refers to actual behaviour and choices in concrete cases. Even a short look around tells us that much of the public's ecocentrism does not affect their actions. Social psychological studies confirm this, when showing only weak correlations between ecological world views (mainly based upon the NEP scale) and behaviour (Steg and Vlek in press), meaning that we hardly ever act according to our ideas on nature.
To put the distinction between individual world views and behaviour in perspective, we have to look into the large role institutions play in our lives. Individuals depend on institutions in order to overcome the many problems of collective action that the environmental crisis comprises. Individuals are restricted by regulations and existing organisations in their stuggle for an environmentally sound society. In contrast to individuals, institutions give much more attention to the consistency between ethics and actions, because they have to account for their actions to a large number of people. Unfortunately, this higher consistency between culture and action does not lead to greener institutions because their ethics do not represent those of the public. Whereas this study showed that most civilians hold a rather ecocentric vision of nature, institutions tend to reflect the economic utility of nature (Butler and Acott 2007;

Campagna and Fernández 2007). The discrepancy between the utilitarian mission statements of institutions and the ecocentric values of the public often forces individuals to swim against the current when showing environmental behaviour. Institutions should recognise the public's Stewardship ethics and regard it as a valuable basis for their objectives. In so doing they may contribute to a society in which environmental behaviour is the most logical.

The limitation by institutions to make ecocentric choices also becomes apparent in planning processes, such as the joint visioning experiments in Beuningen and Arnemuiden (Chapter 4). During these sessions the participants were asked to reach a common design while taking into consideration several objectives of organisations dealing with the area, such as housing. These limitations already excluded radical ecocentric actions such as creating a large natural area that is prohibited to humans. Yet, the distinction between culture and action also gives individuals the ability to cooperate and to make joint decisions. During the meetings in Beuningen and Arnemuiden many differences between the values of the participants appeared, but at the same time they managed to jointly develop a plan. Obviously, such a mutual plan can never do justice to the diversity in values, but the participants did not find many difficulties in reaching consensus. How can this be explained? Apart for institutional limitations the very concrete object of decision making played a role. The focus on a specific location or problem leads our attention to certain landscape elements.

These elements evoke many associations in us that may be far more decisive in planning than abstract ethics regarding nature in general. Roughly, the more concrete the object or task at hand, the stronger the voice of the concrete reality will be compared to the general principles.

An example of this is the expected return of wolves in the Netherlands. Presumably, once the first wolf is spotted, the public debate will primarily be focused on our (Little Red Riding Hood) associations that the image of a wolf evokes and not so much on our abstract thoughts regarding the relationship between humans and nature.

Our associations with and reactions to a concrete policy object downplay the differences between the abstract world views of the debaters. Fortunately, this mechanism makes cooperation, joint planning and consensus possible between people that do not share the same world view but cooperate on concrete issues. Apparently, world view differences converge into relatively easy consensus about relatively close, non-radical plan alternatives. Both the limitations and the concrete character of a local project also explain why the outcomes of both visioning experiments were not fundamentally different from the ones made earlier by experts.

The ability of participants to reach a mutual goal despite their differences in environmental ethics, supports the hypothesis of Norton (1991), in which he claims that those who adhere to ecocentrism may often endorse the similar policies as weak anthropocentrists. Since the empirical evidence to support this hypothesis is rather delicate, I would recommend further empirical studies to test Norton's hypothesis and to gain more insight in the mechanisms that make people with different environmental ethics reach a common goal.

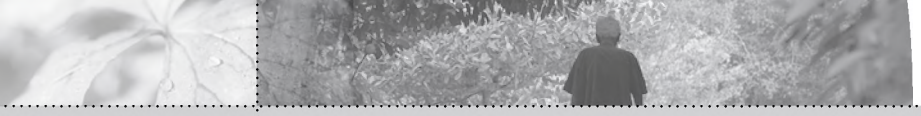
Despite that fact that environmental ethics only lead to a gradual difference in planning, they should not be regarded as unimportant. Firstly, the ethics determine someone's drive; they provide people's understanding of the world, reasons to act and the strength to stand up for certain issues. Secondly, whereas local planning confines the options and the applicability of ethics, in the development of long term policy lines and scenarios of a country or region, environmental ethics form an important guide. The designers of long-term general policies (e.g. on rivers, land use or conservation) therefore carry the social responsibility of incorporating the rather ecocentric values of the public in their work, even if these values are not radically voiced in local planning situations.

Returning to the 'two philosophies' scheme, we see that there is more to do than articulative philosophy only. In addition to the articulating approach of this thesis that starts with world views and then searches for the link with action, the analytical approach could lead to new insights by starting 'from the action up'. Both social sciences and philosophy could start from actual environmental policies and practices and then scrutinize on what moral grounds these are built. For environmental philosophy this would imply a major change, because the common approach in the field is to develop abstract moral reasoning that can be applied to environmental practices after it is precisely thought through and debated upon. In a more analytical approach ethicists could hermeneutically interpret the morals at work in policy processes and environmentally (un)sound behaviour. This approach has the advantage that it moves away from good intentions towards morals that are actually put into practice.

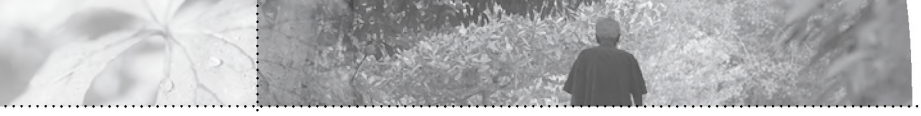
The participants are not asked to reflect upon their ethics and to express them verbally as in empirical Visions of Nature studies; their morals are derived from their behaviour. This creates the opportunity to analyze morals that people are unaware of and to place environmental ethics in the context of many competing ethics that influence the choices we make. The new insights that result from this hermeneutical approach could then be compared and contrasted with empirical results on public Visions of Nature to gain a better understanding of the misfit between expressed good intentions, and commonly accepted actions.

For the social scientists it is not a radical change to start from behaviours and policy practises to understand the underlying mechanisms at work. Nevertheless, the number of studies that attempt to recognise environmental ethics in these settings is still rather small and most are based upon policy documents (Norton 1991; Swart et al. 2001; Butler and Acott 2007; Van Heezik 2007). In addition to these studies it would be interesting to look into the ethics at work behind the viewpoint participants articulate in a planning process, to discover which values are decisive and which are not even expressed. These new insights can then be compared to the Visions of Nature of the participants and to policy documents and plans that result from the process, to better understand which values survive in the world of concrete action.

This new approach could supplement present knowledge on public Visions of Nature and give more insight in the relationship between environmental ethics and practice. This is a highly relevant topic since we are still facing an ecological crisis that is not going to be solved by the ecocentric morals of the public alone.



Summary



Summary

This thesis tests which philosophical thoughts regarding the position of humans in nature are shared by the public. In so doing it also tests some assumptions that are dominant among environmental ethicists. For instance, since Lynn White's article on the roots of our ecological crisis in 1967, many scholars assume that Western man regards himself as a Master over nature. In line with White's argument, many have pointed at Christianity as the root of our dominating stance on nature. Some scholars added some nuances to this analysis by highlighting traditions in Western culture that express a nature friendly ethic. As history always leaves its marks, we may wonder what our stance on nature is at the beginning of the 21st century. Could present-day society possibly have entered a new cultural era? An era that does not continue the dominant view of Mastery over nature but that revives minor traditions and alternative roots? This thesis empirically investigates this question among Western lay people. Based upon the Visions of Nature concept as described by Van den Born et al. (2001), it studies three components:

1. Image of nature - *What is nature?*
2. Value of nature - *Why is nature important?*
3. Image of the human/nature relationship - *What is the appropriate way to relate to nature?*

This study emphasises the last component, based upon a classification into four human/nature relationships: Mastery over nature, Stewardship of nature, Partnership with nature and Participation in nature. These four relationships are derived from philosophy and are closely linked to the first two Visions of Nature components: the image and the value of nature. Due to its basis in philosophy the study largely uses the concepts and vocabulary of environmental ethicists and can therefore be called 'empirical philosophy'. This makes it somewhat difficult to position among other empirical studies on ecological world views as carried out by psychology and sociology.
Previous Visions of Nature studies showed that almost all respondents in the Netherlands reject the image of Mastery over nature and instead embrace a Stewardship ethic. This thesis will investigate whether the Dutch results can also be found in other Western countries. Furthermore, it investigates how the religious background and the opinions on river policy of civilians relate to their images of the human/nature relationship. This study aims to contribute to the practice of river landscape planning, by searching for correlations between public Visions of Nature and their preferences for

certain river measures. This contribution is twofold; it gives recommendations on communication with civilians and it elaborates on the opportunities to incorporate public values in one of the first stages of planning, called visioning. Summarising:

This study investigates the Visions of Nature of Western lay people and connects these visions with their ideological and factual characteristics in order to empirically test philosophical theories and to give recommendations on visioning and communication in river landscape planning.

Examples of the factual characteristics that are studied are age, sex, educational level and the distance between home and the river. The ideological characteristics are for instance the attachment to place, the perception of safety and religious background. Especially religion is an important characteristic that receives major attention in Chapter 2. Subsequent chapters especially explore the link between lay people's Visions of Nature and their opinion on flood risk management. Chapter 6 then brings the results of an international Visions of Nature survey to the attention of philosophers and discusses the implications for environmental ethics.

Chapter 2 elaborates on religion as a shaper of ecological world views. It tests the two hypotheses of Lynn White: a) Western man has the world view of Mastery over nature, and b) Christianity is the root of this domineering ethic. In contrast to many empirical studies on this issue, this chapter does not only deal with Christianity and the ethics of Mastery, but also shines a light on non-western religions and on more ecocentric images of relationship such as Stewardship and Participation. This chapter employs a mixed method design built on 27 semi structured interviews and a small scale written survey (N=53) based upon the Human and Nature (HaN) scale. The interviews were held among five populations in Victoria (a small city on Canada's west coast): Protestants, Muslims, Native Americans, Buddhists, and secularists. The findings confirm previous results in the Netherlands because Mastery over nature, in which humans wield hierarchical power over nature, was rejected by all groups. Almost all Protestants and Muslims adhered to their interpretation of Stewardship in which humans are not positioned above but in nature. Buddhists and Native Americans considered themselves to be spiritual Participants in nature. The secularists combined the images of the human/nature relationship to exemplify their ethic. These results suggest a link between the respondents' religion and their adherence to images of relationship. This link appeared also between religion and the images of nature; protestants and Muslims regarded nature as a gift from God that was neither sacred nor spiritual, all Buddhists considered nature as spiritual and the Native Americans thought nature was both spiritual and sacred.

Chapter 3 explores the connection between lay people's Visions of Nature and their opinion on specific flood protection measures. Among the studied measures are traditional dike reinforcements but also more sustainable options that are part of the Dutch Room for River policy, such as side channel construction, dike relocation and the

removal of trees in the floodplain. With the policy shift in the Netherlands from traditional dike reinforcements toward Room for River the paradigm also seems to shift from Mastery over nature to a more Partnership-like attitude toward nature.
This chapter investigates whether the public adheres to measures proposed under the new paradigm and whether these adherences relate to their environmental ethics, i.e. their image of human/nature relationship. A survey (N=423) and 12 semi structured interviews were carried out in the municipality of Beuningen along the river Waal (i.e., Rhine) in the East of the Netherlands. The results show that the respondents regard only the construction of side channels as natural and beautiful while they perceive traditional dike reinforcement as the safest option. Concerning the Visions of Nature the analyses show that even though the visions are remarkably ecocentric, Partnership with nature is not the dominant idea. In accordance with the results from Canada the public primarily embraces a variant of Stewardship in which a human being does not stand above nature but is part of it. This variant was named Guardianship of nature. The interrelations between Visions of Nature and opinions on the flood risk measures are weak; only a relatively high adherence to Guardianship predicts a more negative opinion on the removal of trees.

Chapter 4 focuses on how public Visions of Nature (and other landscape elements) can be incorporated in visioning. This is an early stage of landscape planning aimed at the design of a future. After an introduction to visioning and its significance to include expert knowledge and public values, two visioning cases are evaluated. The first is in Beuningen where experts and civilians jointly participated in four visioning meetings to design a plan for the floodplain including flood risk measures. During the second meeting the survey results as described in Chapter 3 were brought to the attention of the participants and they were asked to describe their dream image of the floodplain. In the other case, Arnemuiden, civilians and experts also designed a landscape plan, but did this in separate meetings. During the kick off meeting the participants ranked how they valued certain landscape elements in a questionnaire. In later sessions they were asked to make joint dream images and to evaluate these based upon the landscape elements most valuable to them. The cases show how surveys, semi-structured interviews and the emphasis on values during the visioning exercise itself are very suitable methods to make the civilians familiar with values held by themselves, by other participants and by the local community. The explicit values made communication more effective and enhanced mutual learning. In both cases the public proved to be perfectly capable of expressing their values and of designing jointly with experts.

The last two empirical chapters present the results of an international survey (N=1811) including a revised version of the HaN scale among riverside residents in France, Germany and the Netherlands. Chapter 5 explores the interrelationship between public Visions of Nature and adherences to two river management styles; traditional dike reinforcement and the more sustainable option to widen the river by relocating a dike land inwards. Three hypotheses were formulated regarding this interrelationship: 1) Adherence to dike reinforcement correlates with the image of Mastery over nature while

adherence to the sustainable style correlates with a more ecocentric ethic, 2) both styles correlate with Mastery and 3) public environmental ethics do not correlate with adherence to the river management styles. Since other factors were also expected to predict the opinion on river management, the respondents' Sense of Place, experiences with flooding, safety perception, leisure experiences and background variables were part of the study. The results show high levels of adherence to the sustainable management style and a rejection of dike reinforcement. The first hypothesis was accepted because adherence to Mastery correlated with positive opinions on dike reinforcement and adherence to Guardianship predicted a positive opinion on the sustainable management style. Thus, according to the public, a policy shift from dike reinforcement to a more sustainable style is a fundamental one in the sense that it comprises a change in environmental ethics. Of the other factors especially the images of nature and the leisure experiences correlated with the opinion on river management.

Based upon the same survey Chapter 6 goes more deeply into the character of the images of the human/nature relationship as distinguished by the public. This chapter links the content of these empirical images with philosophical thought and in so doing brings the results to the attention of philosophers. This chapter emphasises that the results as described in Chapter 5 imply that environmental ethicists should no longer assume that the ethics of the public are merely anthropocentric. Moreover we dispute the idea of a single form of ecocentrism, since the public clearly distinguishes between the image of Partnership and Participation. Yet, despite these rather ecocentric ethics of the public, societies only show very weak responses to the environmental crisis. This can partly be explained by the large role institutions play in our lives and their failure to recognize and express the values of the public. At the same time the will of individuals is too weak to put into practice their good intentions. Therefore, we propose a hermeneutic virtue ethics approach to articulate the meanings that actually already play a role in environmental practices. Instead of starting with abstract moral ideas, a hermeneutical ethics aims to re-interpret the meanings that, to some degree, already structure our actual practices.

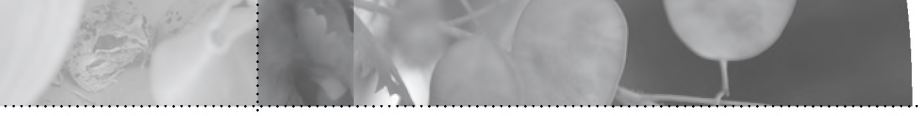
The conclusion deals with the implications for theory and practice:

1 The public enthusiasm for Guardianship of nature as shown in this thesis demands from environmental philosophy and the social sciences to look beyond the anthropocentrist – ecocentrist dualism. They should be more open to pluralist ethics, which enhance middle ground values and human/nature relationships such as Stewardship and Partnership.

2 Both environmental philosophers and social scientists often work from an articulating approach, in which one aims at the articulation and grounding of new ideas. In addition to this approach both disciplines could benefit from an analytical approach that starts from (environmental) action and behaviour and scrutinises on what moral grounds these are built.

3 The practice of water management should give considerable attention to the communication with the public about future measures and should be more open to the ecocentric nature of lay people's values. Although the inclusions of civilians in joint planning processes is a good means of incorporating public visions in planning, the environmental ethics of the public should especially be taken into account in the development of broad policy directions for a large region over a long period.

Samenvatting



Samenvatting

Dit proefschrift gaat na welke filosofisch gedachten over de positie die de mens inneemt in de natuur worden gedeeld door het publiek. Gaandeweg worden ook enkele onder milieu ethici dominante aannames getest. Bijvoorbeeld, sinds Lynn White in 1967 zijn artikel over de wortels van onze ecologische crisis schreef, hebben veel denkers aangenomen dat de Westerse mens zichzelf beschouwt als Heerser over de natuur. In lijn met dit argument van White, hebben velen het Christelijke geloof aangewezen als de wortel van een dominerende houding ten opzichte van de natuur. Sommigen hebben enige nuance aangebracht in deze analyse door tradities uit de Westerse cultuur te benadrukken die een natuurvriendelijke ethiek uitdragen. Aangezien de geschiedenis altijd zijn sporen nalaat, kunnen we ons afvragen wat ons standpunt ten opzichte van de natuur is aan het begin van de 21ste eeuw. Kan de maatschappij van vandaag een nieuw cultureel tijdperk zijn binnengegaan? Een tijdperk dat niet voortbouwt op het beeld van Heerser over de natuur maar dat kleinere tradities en alternatieve wortels nieuw leven inblaast?

Dit proefschrift onderzoekt empirisch deze vraag onder Westerse leken. Gebaseerd op het concept 'Natuurvisie' zoals beschreven door Van den Born et al. (2001), worden drie componenten bestudeerd:

1 Natuurbeeld - *Wat is natuur?*

2 Natuurwaarden - *Waarom is natuur belangrijk?*

3 Grondhouding ten opzichte van de natuur - *Wat is de juiste relatie tussen mens en natuur?*

In deze studie ligt de nadruk op de laatste component, waarin vier grondhoudingen ten opzichte van de natuur centraal staan: Heerser over de natuur, Rentmeester van de natuur, Partnerschap met de natuur en Participatie in de natuur. Deze vier grondhoudingen zijn afgeleid van de filosofie en zijn nauw verwant aan de eerste twee componenten van 'Natuurvisie': het natuurbeeld en de waarde van de natuur. Doordat de basis van het onderzoek ligt in de filosofie worden vooral de concepten en het vocabulaire van milieu ethici gebruikt. Het onderzoek kan daarom 'empirische filosofie' worden genoemd. Dit maakt het enigszins moeilijk om het te plaatsen tussen andere empirische studies naar ecologische wereldbeelden zoals uitgevoerd in de psychologie en de sociologie.

Voorgaande studies naar natuurvisies hebben laten zien dat bijna alle respondenten in Nederland de houding van de Heerser over de natuur verwerpen en in plaats daarvan een Rentmeesterethiek omarmen. Dit proefschrift zal uitwijzen of deze Nederlandse

resultaten ook kunnen worden gevonden in andere Westerse landen. Daarnaast wordt gezocht naar een samenhang tussen opinies over rivierbeleid van burgers en hun grondhoudingen ten opzichte van de natuur en naar een correlatie tussen religie en grondhouding.
Deze studie kan bijdragen aan de planningspraktijk van het rivieren landschap, door de samenhang tussen natuurvisies van het publiek en hun voorkeuren voor bepaalde rivier maatregelen te verhelderen. De bijdrage is tweeledig: het geeft aanbevelingen over communicatie met burgers en gaat in op de mogelijkheden om publieke waarden op te nemen in visie ontwikkeling. Samengevat:

Deze studie onderzoekt de natuurvisies van Westerse leken en verbind deze visies met hun ideologische en feitelijke kenmerken ten einde filosofische theorieën te testen en aanbevelingen te geven voor visie ontwikkeling en communicatie in de planvorming voor het rivierenlandschap.

Voorbeelden van feitelijke kenmerken die worden onderzocht zijn leeftijd, sekse, opleidingsniveau en de afstand tussen woonhuis en de rivier. De ideologische kenmerken zijn bijvoorbeeld de verbondenheid met plaats, de perceptie van veiligheid en de religieuze achtergrond. Van deze kenmerken krijgt vooral religie veel aandacht, hoofdstuk 2 is hier grotendeels aan gewijd. De daarop volgende hoofdstukken verkennen vooral de samenhang tussen de natuurvisie van leken en hun mening over het voorkomen van overstromingen. Hoofdstuk 6 brengt daarna de resultaten van een internationale survey naar natuurvisies onder de aandacht van filosofen en bediscussieert welke implicaties de uitkomsten hebben voor de milieu ethiek.

Hoofdstuk 2 gaat dieper in op religie als bepalende factor voor ecologische wereldbeelden. Het test twee hypotheses van Lynn White; a) de westerse mens heeft het wereldbeeld van heerser over de natuur, en 2) het Christendom vormt de wortel voor deze overheersende ethiek. In tegenstelling tot veel empirische studies over dit onderwerp, behandelt dit hoofdstuk niet alleen het Christelijk geloof en de ethiek van de Heerser, maar schijnt het ook een licht op niet Westerse religies en meer ecocentrische grondhoudingen zoals het Rentmeesterschap en het Participeren in de natuur. Dit hoofdstuk maakt gebruik van een gemengde methoden benadering, gebaseerd op 27 semigestructureerde interviews een kleinschalige survey (N=53) gebaseerd op de HaN (Mens en Natuur) schaal. De interviews zijn gehouden in Victoria (een kleine stad aan de Canadese westkust) onder vijf bevolkingsgroepen: Protestanten, Moslims, oorspronkelijke bewoners, Boeddhisten en seculiere inwoners. De bevindingen bevestigen eerdere resultaten uit Nederland aangezien de visie van Heerser over de natuur verworpen werd door alle groepen. Bijna alle Protestanten en Moslims hingen een eigen interpretatie van de Rentmeester aan waarin de mens niet *boven* de natuur, maar *in* de natuur is geplaatst. Boeddhisten en de oorspronkelijke bewoners beschouwen zichzelf als spirituele Participanten in de natuur. De seculiere respondenten maakten combinaties van grondhoudingen om hun ethiek duidelijk te maken. Deze resultaten suggereren een verband tussen de religie van de respondenten en hun

voorkeur voor een grondhouding. Dit verband lijkt ook tussen religie en natuurbeelden te bestaan; de geïnterviewde Protestanten en Moslims zagen natuur als een geschenk van God, dat noch heilig noch spiritueel was. Alle geïnterviewde boeddhisten beschouwden natuur als spiritueel en de oorspronkelijke bewoners zagen de natuur zowel als spiritueel als heilig.

Hoofdstuk 3 verkent de samenhang tussen natuurvisies van leken en hun mening over specifieke rivier maatregelen. Onder de onderzochte maatregelen vallen zowel traditionele dijkverzwaringen als 'Ruimte voor de Rivier' opties. Deze laatste vorm van beheer wordt als duurzamer gezien en omvat maatregelen als het graven van nevengeulen, dijk teruglegging en het verwijderen van bomen in de uiterwaarden. Met het verschuiven van het beleid in Nederland van traditionele dijkverzwaringen naar 'Ruimte voor de Rivier', lijkt het paradigma van Heerser over de natuur ook op te schuiven naar een meer Parnerschap-achtige houding ten opzichte van de natuur. Dit hoofdstuk onderzoekt het oordeel van de bevolking over Ruimte voor de Rivier maatregelen en of hun oordeel gerelateerd is aan hun grondhouding ten opzichte van de natuur. Een survey (N=423) en 12 semigestructureerde interviews zijn uitgevoerd in de gemeente Beuningen langs de rivier de Waal in het oosten van Nederland. De resultaten laten zien dat de respondenten alleen het graven van nevengeulen als natuurlijk en mooi beschouwen, terwijl ze de traditionele dijkverzwaring als de meest veilige optie zien. Wat betreft de natuurvisies laat de analyse zien dat de grondhoudingen opmerkelijk ecocentrisch zijn, maar dat Partnerschap met de natuur niet het overheersende idee is. In overeenstemming met de resultaten uit Canada, omhelst de bevolking een variant van Rentmeesterschap waarin de mens niet boven de natuur staat maar er deel van uitmaakt. Deze variant wordt de 'Beschermer van de natuur' (Guardian) genoemd. De samenhang tussen publieke natuurvisies en het oordeel over maatregelen tegen overstromingen is zwak. Alleen een negatief oordeel over het verwijderen van bomen hangt samen met een hoge aanhang voor de grondhouding van de Beschermer van de natuur.

Hoofdstuk 4 richt zich op de wijze waarop publieke visies op natuur (en andere landschapselementen) opgenomen kunnen worden in visie ontwikkeling. Dit is een vroeg stadium van landschapsplanning die erop gericht is om te komen tot een ontwerp voor de toekomst. Na een inleiding over visievorming en het belang om hierin zowel kennis van experts als publieke waarden mee te nemen, worden er twee cases geëvalueerd. De eerste case is in Beuningen, waar deskundigen en burgers gezamenlijk participeerden om in vier bijeenkomsten een plan voor de uiterwaard te ontwerpen. Hierbij speelden overstromingsbeperkende maatregelen een grote rol. Tijdens de tweede bijeenkomst zijn de resultaten van de survey uit hoofdstuk 3 onder de aandacht van de deelnemers gebracht. Als methode om hun waarden en visie te uiten is hen gevraagd om hun droombeeld van de uiterwaarden te presenteren. In de andere case, Arnemuiden, ontwierpen burgers en experts ook een plan voor het landschap. De experts hadden hierbij de taak om de ontwerpen van de burgers te toetsen op haalbaarheid. Tijdens de eerste bijeenkomst rangschikten de deelnemers in een vragenlijst verschillende

landschapselementen op basis van de waarde die ze eraan hechten. In latere sessies is hun gevraagd om gezamenlijk droombeelden te maken en deze te evalueren gebaseerd op de meest gewaardeerde landschapselementen. De cases laten zien hoe verschillende methoden de burgers vertrouwt maken met hun eigen waarden, de waarde van andere deelnemers en van de plaatselijke bevolking. Methoden die onder de loep worden genomen zijn vragenlijsten, semigestructureerde interviews en het achterhalen van waarden tijdens de visievorming zelf. Het uiten van de waarden maakten de communicatie effectiever en bevorderde het leren van elkaar. In beide cases liet het publiek zien dat zij goed in staat zijn om hun waarden te uiten en om samen met experts een plan te ontwerpen.
De laatste twee empirische hoofdstukken presenteren de resultaten van een internationale survey (N=1811), met een herziene versie van de HaN schaal. Deze werd gehouden onder bewoners langs grote rivieren in Frankrijk, Duitsland en Nederland. Hoofdstuk 5 verkent de samenhang tussen publieke natuurvisies en aanhang voor twee stijlen van rivierbeheer; traditionele dijkverzwaringen of de meer duurzame optie om de rivier meer ruimte te geven door dijk teruglegging. Drie hypothesen zijn geformuleerd over een mogelijke samenhang: 1) Aanhang voor dijkverzwaringen correleert met de grondhouding van Heerser over de natuur, terwijl aanhang voor de duurzame stijl samenhangt met een meer ecocentrische ethiek, 2) beide stijlen correleren met de Heerser en 3) de milieu ethiek van de bevolking hangt niet samen met de aanhang voor een bepaalde stijl van rivierbeheer. Omdat de verwachting is dat ook andere factoren van invloed zijn op de mening over rivierbeheer maken ook de verbondenheid met plaats, ervaringen met overstromingen, de perceptie van veiligheid, recreatie motieven en persoonlijke kenmerken onderdeel uit van de studie. Uit de resultaten blijkt dat de respondenten het Ruimte voor de Rivier beheer steunen en dijkverzwaringen afwijzen. De eerste hypothese wordt aangenomen omdat de aanhang voor de ethiek van de Heerser positief samenhangt met de steun voor dijkverzwaring. Tegelijkertijd correleert de aanhang voor de Beschermer van de natuur met steun voor het Ruimte voor de Rivier beheer. Kortom, de bevolking ziet in de verschuiving van dijkverzwaring naar 'Ruimte voor de Rivier' een vrij fundamentele verandering van beleid, omdat er een andere omgang met de natuur aan ten grondslag ligt. Van de andere onderzochte factoren hangen vooral de natuurbeelden en de recreatie motieven samen met de mening over het rivierbeheer.

Gebaseerd op dezelfde survey, gaat hoofdstuk 6 dieper in op het karakter van grondhoudingen ten opzichte van de natuur die door de bevolking worden onderscheiden. Dit hoofdstuk verbindt de inhoud van deze empirische beelden met filosofisch gedachtegoed en brengt zodoende de resultaten onder de aandacht van filosofen. Dit hoofdstuk benadrukt dat de resultaten zoals beschreven in hoofdstuk 5 impliceren dat milieu ethici niet langer zouden moeten aannemen dat de ethiek van de bevolking antropocentrisch is. Daarnaast betwisten we het idee dat er slechts één enkele vorm van ecocentrisme bestaat, omdat de bevolking een duidelijk onderscheid maakt tussen de grondhoudingen Partnerschap en Participatie. Echter, ondanks deze vrij ecocentrische ethiek van haar bevolking, bedient de maatschappij als geheel de

milieucrisis slechts van erg zwakke repliek. Dit kan deels verklaard worden door de grote rol die instituties spelen in ons leven en het onvermogen om via institutionele weg de waarden van het publiek te herkennen en te uiten. Tegelijkertijd is de wil van de bevolking te zwak om hun goede intenties in praktijk te brengen. We stellen daarom een benadering voor waarbij vanuit de hermeneutische deugdethiek wordt gezocht naar de betekenissen die een rol spelen in hun milieugedrag. In plaats van te beginnen met abstracte morele ideeën, tracht een hermeneutische ethiek de betekenissen te interpreteren die schuil gaan achter ons doen en laten.

In de conclusie worden de implicaties voor theorie en praktijk besproken:

1 Het publieke enthousiasme voor de Beschermer van de natuur zoals blijkt uit dit proefschrift, vraagt van zowel milieufilosofie als sociale wetenschappen om verder te kijken dan het dualisme tussen antropocentrisme en ecocentrisme. Beiden zouden meer open moeten staan voor een pluralistische ethiek die ook gematigde waarden en grondhoudingen zoals Rentmeesterschap en Partnerschap omvat.

2 In zowel de sociale wetenschappen als de milieufilosofie wordt vaak een articulerende benadering gebruikt, waarbij het vooral gaat om nieuwe ideeën gestalte te geven en te onderbouwen. In aanvulling op deze articulerende benadering zouden beide disciplines hun voordeel kunnen doen met een analytische benadering. Deze begint bij (milieu) handelingen en gedrag en onderzoekt nauwgezet op welke morele gronden deze zijn gebouwd.

3 De praktijk van het waterbeheer zou aanzienlijke aandacht moeten geven aan de communicatie met de bevolking over toekomstige maatregelen en meer open moeten staan voor de ecocentrische aard van publieke waarden. De milieu ethiek van de bevolking zal vooral in ogenschouw genomen moeten worden bij het uitzetten van brede beleidslijnen die betrekking hebben op een grote regio en over een lange periode.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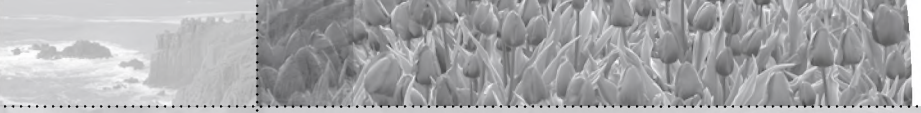

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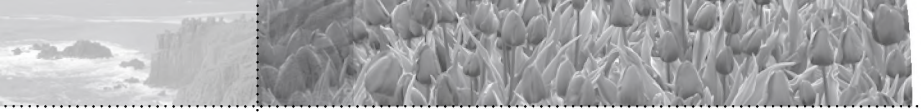

Curriculum Vitae

Mirjam de Groot was born in Alkmaar in 1978. She spent her youth in Linschoten and completed secondary education at the Kalsbeek college in Woerden in 1996. After a travel to India she chose to study Environmental Policy Sciences at the Radboud University in Nijmegen, motivated by her concern for the environment. After her first-year diploma she dedicated one year to the Student Union Nijmegen (AKKU), where she supported students in their strive for better educational quality. When she returned to fulltime study, the doctorate programme had just been merged with Social Environmental Science. Through this, she became involved in the social sciences and environmental philosophy. During her internship at the University of Victoria, Canada, Mirjam combined both these passions into an empirical study on Visions of Nature among Canadians with different religious backgrounds. After she graduated with distinction in Social and Political Sciences of the Environment in 2003, she was briefly employed as a junior teacher at Social Environmental Sciences. In 2004 she started her Visions of Nature research within the 'Freude am Fluss' project at the Centre for Sustainable Management of Resources at the Radboud University. In 2009 Mirjam started as a researcher at Alterra, part of Wageningen University and Research centre. She mainly studies the interaction between humans and their (natural) environment focussing on landscape perceptions, Visions of Nature and Participation processes.